2006-08 STEERING

Hydraulic Power Steering Components - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

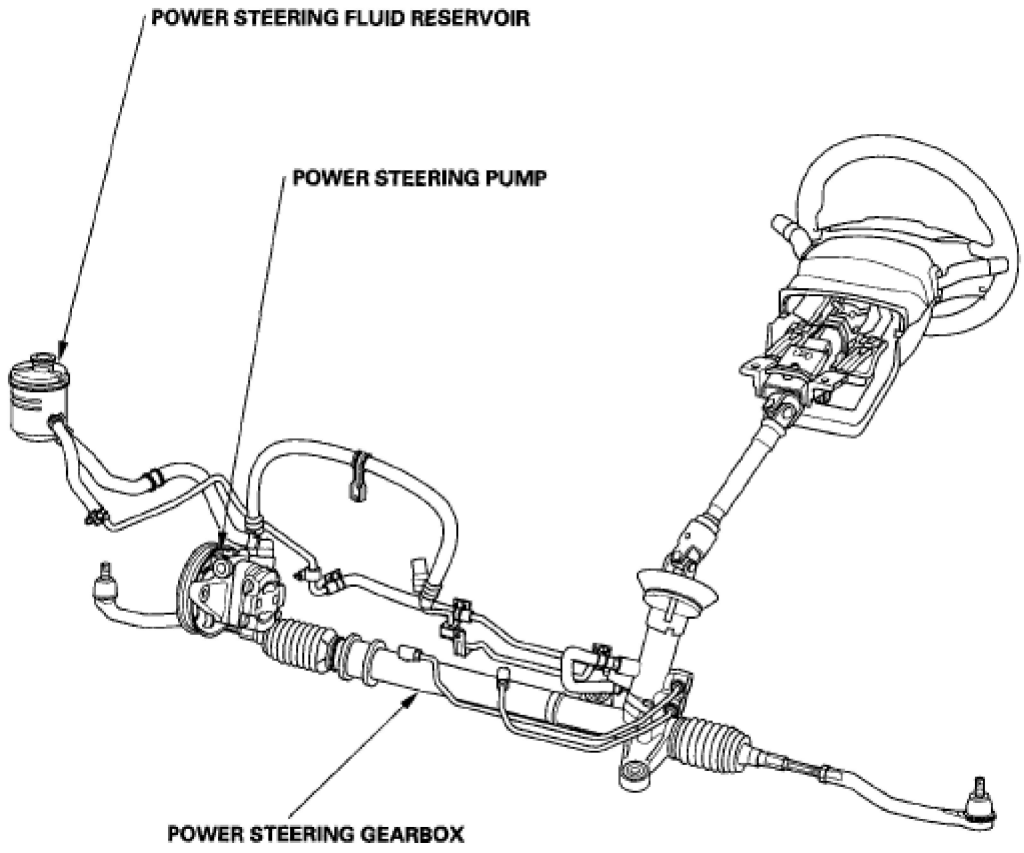

Fig. 1: Identifying Hydraulic Power Steering Components Location

SYMPTOM TROUBLESHOOTING INDEX

Find the symptom in the chart below, and do the related procedures in the order listed until you find the cause.

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Procedure(s)	Also check for
		• Modified

Hard steering	Troubleshoot the system (see **Symptom Troubleshooting**).	suspension • Damaged suspension • Tire sizes, tire varieties, and air pressure
Assist (excessively light steering at high speed)	Check the rack guide adjustment (see **RACK GUIDE ADJUSTMENT**).	Front wheel alignment (see **WHEEL ALIGNMENT**)
Shock or vibration when the steering wheel is turned to full lock	1. Check the rack guide adjustment (see **RACK GUIDE ADJUSTMENT**). 2. Check the drive belt for slippage (see **DRIVE BELT INSPECTION**). 3. Check the power steering pump fluid pressure with T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**) or T/N 07406-001000A (see **PUMP PRESSURE TEST WITH T/N 07406-001000A**). 4. Overhaul the steering gearbox (see step 2).	
Steering wheel will not return smoothly	1. Check cylinder lines for deformation. 2. Check the ball joints for binding. 3. Check wheel alignment (see **WHEEL ALIGNMENT**). 4. Overhaul the steering gearbox (see step 2).	
	1. Check the rack guide adjustment	

Uneven or rough steering	(see **RACK GUIDE ADJUSTMENT**). 2. Check the drive belt (see **DRIVE BELT INSPECTION**). 3. Check for low or erratic engine idle speed (see **IDLE SPEED INSPECTION**). 4. Check for air in the power steering system due to air entering inlet side of pump. 5. Check for low fluid level in the power steering reservoir due to possible leaks in system (see **FLUID REPLACEMENT**). 6. Overhaul the steering gearbox (see step 2).	
Steering wheel kicks back during wide turns	1. Check the drive belt (see **DRIVE BELT INSPECTION**). 2. Check the power steering pump fluid pressure with T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**) or T/N 07406-001000A (see **PUMP PRESSURE TEST WITH T/N 07406-001000A**).	
	1. Check when the noise occurs: • If the noise is heard up to 2-3 minutes after starting the engine in cold weather, this is normal. • If the noise is heard when the wheel is turned with the vehicle stopped, this is normal	

Humming noise from the power steering system	due to the fluid pulsation. 2. Check for the high-pressure hose touching the subframe or body. 3. Check for automatic transmission converter noise (A/T). 4. Check for air bubbles in the power steering fluid, leak on inlet side of pump. 5. Check for particle contamination of fluid and restricted filter in the reservoir.	Pump pressure
Power steering rack rattle or chattering	1. Check for loose steering components (tie-rod and ball joints). Tighten or replace as necessary. 2. Check the steering column shaft for wobbling. If the steering column wobbles, replace the steering column assembly (see **STEERING COLUMN REMOVAL AND INSTALLATION**). 3. Check the rack guide adjustment (see **RACK GUIDE ADJUSTMENT**). 4. Check the power steering pump pulley: • If the pulley is loose, tighten it (see step 46). • If the pump shaft is loose, replace the pump (see **PUMP REPLACEMENT**).	
	• Check the fluid level. If low, fill the reservoir to the proper level and	

Hissing from the power steering system/foaming fluid	check for leaks (see **FLUID LEAKAGE INSPECTION**). • Check the reservoir for leaks. • Check for crushed inlet hose or loose hose clamp allowing air into the suction side of the system (see **FLUID LEAKAGE INSPECTION**). • Check the power steering pump shaft oil seal for leaks.	Air in the P/S fluid
Noise from the power steering pump	• Compare the pump noise at normal operating temperature to another like vehicle (pump noise for 2-3 minutes after starting the engine in cold weather is normal). • Remove and inspect the pump for wear and damage (see **PUMP REPLACEMENT**).	• P/S pump pressure • Air in the P/S fluid
Squeaking from the power steering pump	Check the drive belt (see **DRIVE BELT INSPECTION**).	
Fluid leaks from the steering gearbox	• Fluid leaks from the top of the valve body unit. Overhaul the valve body unit (see step 19 on page 17-51). • Fluid leaks from the driver's side boot. Replace the valve oil seal on the pinion shaft. Replace the cylinder end seal on the gearbox side. • Fluid leaks from the passenger's side boot. Replace the cylinder end seal on the cylinder side.	

	• Fluid leaks from pinion shaft near the lower steering joint bolt. Overhaul the valve body unit (see step 19 on page 17-51). • Fluid leaks from the steering damping valve covers on the valve body unit. Replace the valve housing.	
Fluid leaks from the power steering line	• Fluid leaks from the cylinder line connections (flare nuts). Tighten the connection and retest (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**). • Fluid leaks from a damaged cylinder lines. Replace the cylinder line (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**). • Fluid leaks from the pump outlet hose or return line fitting on the valve body unit (flare nuts). Tighten the fitting and retest. If it still leaks, replace the hose, the line, or valve body unit as necessary.	
Fluid leaks from the power steering pump	• Fluid leaks from the front oil seal. Replace the front oil seal. • Fluid leaks from the power steering pump housing. Replace the leaking O-rings or seals (see **FLUID LEAKAGE INSPECTION**), and if necessary replace the power steering pump (see **PUMP REPLACEMENT**).	

Fluid leaks from the power steering reservoir	• Fluid leaks from around the reservoir cap because fluid level is too high. Drain the reservoir to the proper level. If the fluid is aerated check for an air leak on the inlet side of pump. • Fluid leaks from reservoir. Check for reservoir for cracks and replace as necessary.	
Fluid leaks from the power steering pump outlet hose (high-pressure)	• Check the fitting for loose bolts. If the bolts are tight, replace the fitting O-ring. • Fluid leaks at the swagged joint. Replace the pump outlet hose.	
Fluid leaks from the power steering pump inlet hose (low-pressure)	Check the hose for damage, deterioration, or improper assembly. Replace or repair as necessary.	

SYMPTOM TROUBLESHOOTING

HARD STEERING

1. Check the power assist (see **STEERING WHEEL ROTATIONAL PLAY CHECK**).

   Is the initial turning load more than 34 N (3.5 kgf, 7.7 lbf)?

   YES -Go to step 2.

   NO -Power assist is OK.

2. Connect the P/S joint adapter (pump), P/S joint adapter (hose), and P/S pressure gauge T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**), or T/N 07406-001000A (see **PUMP PRESSURE TEST WITH T/N 07406-001000A**) to the pump.

3. Measure steady-state fluid pressure from the pump at idle.

   Is the pressure 1,470 kPa (15 kgf/cm^2 , 213 psi) or less?

   YES -Go to step 4.

   NO -Go to step 8.

4. Measure the pump relief pressure at idle.

   Is the pressure 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi) or more?

   YES -Go to step 5.

   NO -Go to step 9.

5. With a spring scale, measure the power assist in both directions, to the left and to the right.

   Are the two measurements within 5.0 N (0.51 kgf, 1.12 lbf) of each other?

   YES -Go to step 6.

   NO -Go to step 11.

6. Measure the fluid pressure with both pressure gauge valves open (if so equipped), while turning the steering wheel fully to the left and fully to the right.

   Is the pressure 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi) or more?

   YES -Go to step 7.

   NO -Faulty steering gearbox.

7. Adjust the rack guide (see **RACK GUIDE ADJUSTMENT**), and retest.

   Is the steering OK?

YES -Repair is completed.

NO -Faulty steering gearbox.

8. Check the outlet and return hoses and lines between the pump and the steering gearbox for clogging and deformation.

   Are the lines clogged or deformed?

   YES -Repair or replace the lines.

   NO -Faulty valve body unit.

9. Disassemble the pump (see **PUMP OVERHAUL**).
10. Check the pressure control valve for smooth movement and leaks (see step 16).

    Is the pressure control valve OK?

    YES -Faulty pump assembly.

    NO -Faulty pressure control valve.

11. Check the cylinder lines for deformation (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**).

    Are any of the lines deformed?

    YES -Replace the deformed line.

    NO -Go to step 12.

12. Check for a bent rack shaft or misadjusted rack guide (too tight).

    Is the rack shaft bent or the rack guide adjusted too tight?

    YES -Replace the rack shaft, or readjust the rack guide.

    NO -Faulty valve body unit.

PUMP PRESSURE TEST WITH T/N 07406-0010001

Special Tools Required

- P/S joint adapter (pump) 07RAK-S040111
- P/S joint adapter (hose) 07RAK-S040122
- P/S pressure gauge 07406-0010001

Check the fluid pressure as follows to determine whether the trouble is in the pump or the steering gearbox.

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
3. Remove the pump outlet hose clamp (A) from the intake manifold.

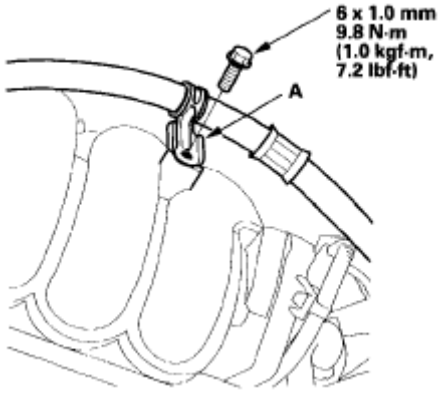

Fig. 2: Identifying Pump Outlet Hose Clamp (With Torque Specifications)

4. Disconnect the pump outlet hose, then install the P/S joint adapter (pump) on the pump (A). Take care so as not to spill the power steering fluid on the frame and other parts.

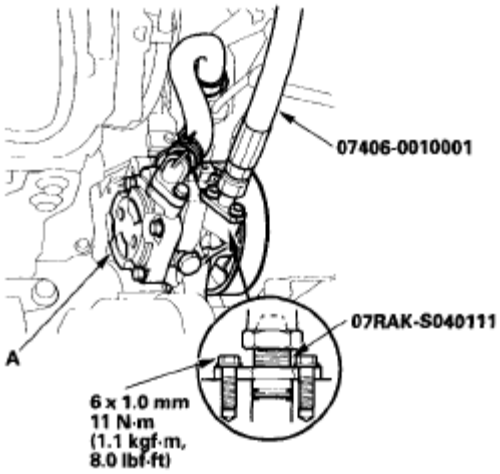

Fig. 3: Identifying P/S Joint Adapter (Pump) On Pump (With Torque Specifications)

5. Install the P/S pressure gauge to the P/S joint adapter (pump).
6. Connect the P/S joint adapter (hose) to the P/S pressure gauge.
7. Connect the pump outlet hose (A) to the P/S joint adapter (hose).

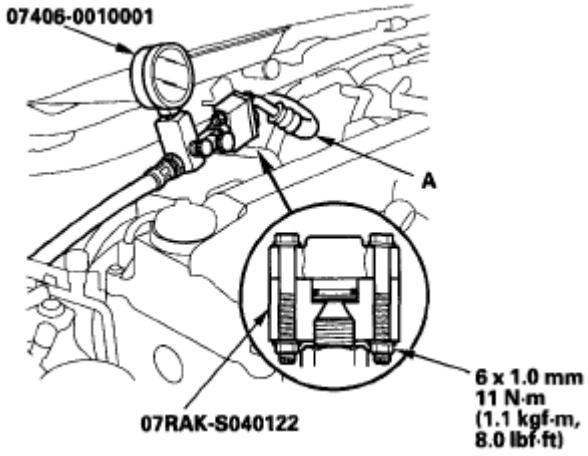

Fig. 4: Identifying Pump Outlet Hose To P/S Joint Adapter (Hose) (With Torque Specifications)

8. Fully open the shut-off valve (A).

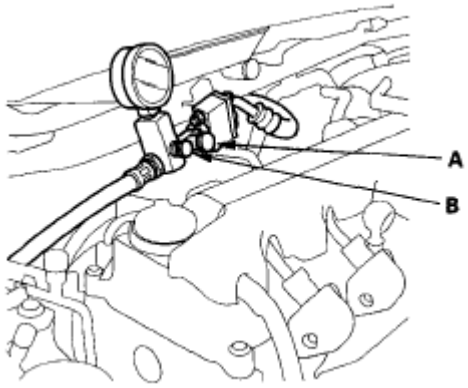

Fig. 5: Identifying Pressure Control Valve

9. Fully open the pressure control valve (B).
10. Start the engine, and let it idle.
11. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158°F (70°C).
12. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should be no more than 1,470 kPa (15 kgf/cm^2 , 213 psi). If it reads higher, check for:
    - Clogged or deformed pump outlet or return line between the pump and the steering gearbox.
    - Clogged valve body unit.
13. Raise the engine speed to 3,000 rpm, and measure the fluid pressure. If the pump is in good condition, the gauge should read at least 1,470 kPa (15 kgf/cm^2 , 213 psi). If it reads higher, repair or replace the pump.
14. Lower the engine speed, and let it idle. Close the shut-off valve, then close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTE: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by overheating.

15. Immediately open the shut-off valve fully.

If the pump is in good condition, the gauge should read at least 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.

16. Reinstall all removed parts.

PUMP PRESSURE TEST WITH T/N 07406-001000A

Special Tools Required

- P/S joint adapter (pump) 07RAK-S040111
- P/S joint adapter (hose) 07RAK-S040122
- P/S pressure gauge 07406-001000A

Check the fluid pressure as follows to determine whether the trouble is in the pump or the steering gearbox.

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
3. Remove the pump outlet hose clamp (A) from the intake manifold.

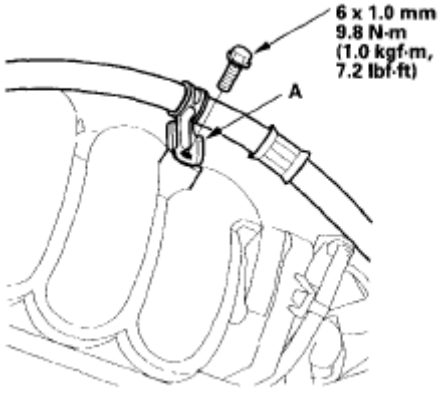

Fig. 6: Identifying Pump Outlet Hose Clamp (With Torque Specifications)

4. Disconnect the pump outlet hose, then install the P/S joint adapter (pump) on the pump (A). Take care so as not to spill the power steering fluid on the frame and other parts.

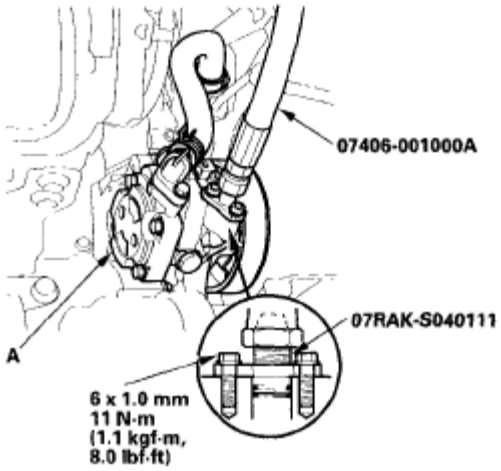

Fig. 7: Identifying P/S Joint Adapter (Pump) On Pump (With Torque Specifications)

5. Install the P/S pressure gauge to the P/S joint adapter (pump).
6. Connect the P/S joint adapter (hose) to the P/S pressure gauge.
7. Connect the pump outlet hose (A) to the P/S joint adapter (hose).

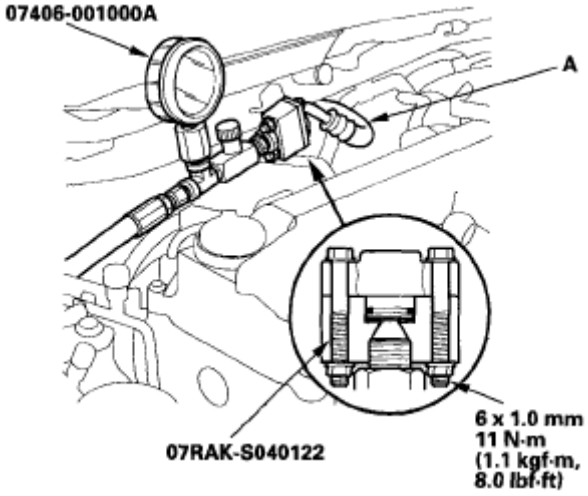

Fig. 8: Identifying P/S Pressure Gauge To P/S Joint Adapter (Pump) (With Torque Specifications)

8. Open the shut-off valve (A) fully.

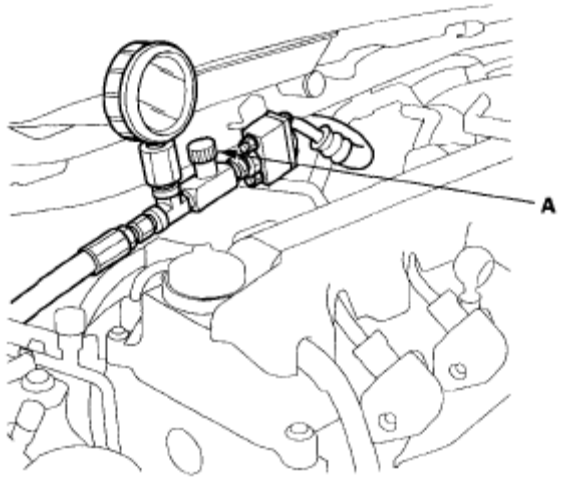

Fig. 9: Identifying Shut-Off Valve - P/S Pressure Gauge

9. Start the engine, and let it idle.
10. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158°F (70°C).
11. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should be no more than 1,470 kPa (15 kgf/cm^2 , 213 psi). If it reads higher, check for:
    - Clogged or deformed pump outlet or return line between the pump and the steering gearbox.
    - Clogged valve body unit.
12. Raise the engine speed to 3,000 rpm, and measure the fluid pressure. If the pump is in good condition, the gauge should read at least 1,470 kPa (15 kgf/cm^2 , 213 psi). If it reads higher, repair or replace the pump.
13. Lower the engine speed, and let it idle. Close the shut-off valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTE: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by overheating.

14. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi).

A low reading means pump output is too low for full assist. Repair or replace the pump.

15. Reinstall all removed parts.

FLUID LEAKAGE INSPECTION

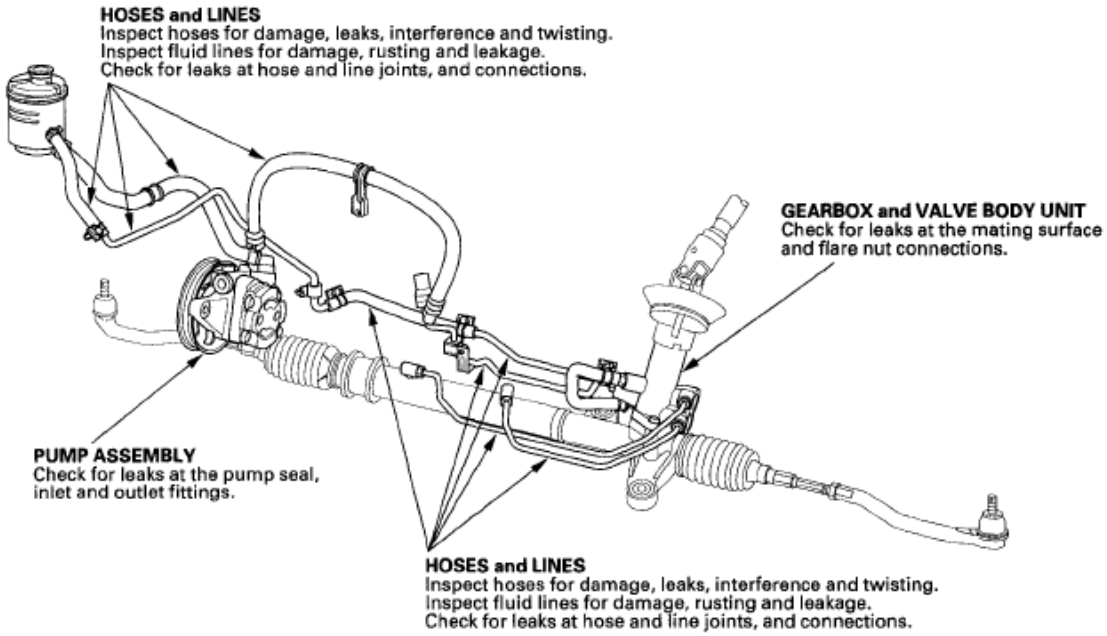
HOSES and LINES
Inspect hoses for damage, leaks, interference and twisting.
Inspect fluid lines for damage, rusting and leakage.
Check for leaks at hose and line joints, and connections.
GEARBOX and VALVE BODY UNIT
Check for leaks at the mating surface and flare nut connections.
PUMP ASSEMBLY
Check for leaks at the pump seal, inlet and outlet fittings.
HOSES and LINES
Inspect hoses for damage, leaks, interference and twisting.
Inspect fluid lines for damage, rusting and leakage.
Check for leaks at hose and line joints, and connections.

Fig. 10: Identifying Fluid Leakage Components Location

FLUID REPLACEMENT

Check the reservoir (A) at regular intervals, and add the recommended fluid as necessary. Always use Honda Power Steering Fluid. Use of any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.

NOTE: If the fluid is contaminated, the screen in the reservoir may be partially blocked. Replace the reservoir if necessary.

System capacity:
0.8 L (0.85 US. qt) at disassembly
Reservoir capacity:
0.26 L (0.27 US. qt)

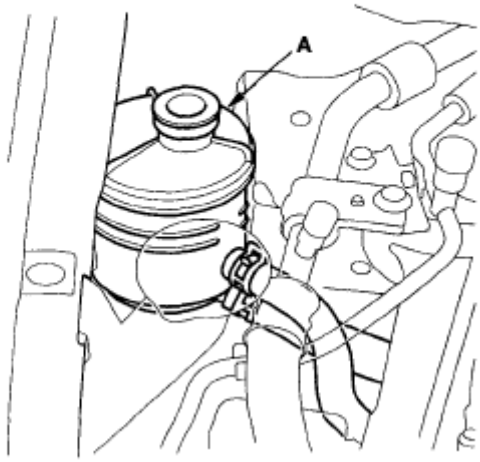

Fig. 11: Identifying Fluid Reservoir

1. Remove the reservoir from its holder. Raise the reservoir, then disconnect the return hose (A) to drain the reservoir. Take care not to spill the fluid on the body and parts. Wipe off any spilled fluid at once.

NOTE: Inspect the reservoir screen for any debris. If the reservoir screen is clogged, replace the reservoir.

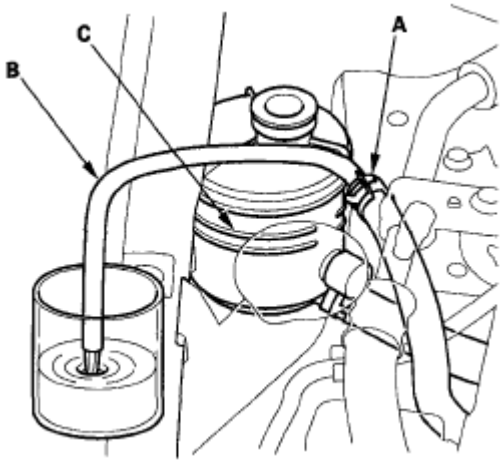

Fig. 12: Identifying Reservoir Tank Specified Level - Upper Level Line

2. Connect a hose (B) of suitable diameter to the disconnected return hose, and

put the hose end in a suitable container.

3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.
4. Reinstall the return hose on the reservoir.
5. Fill the reservoir to the upper level line (C).
6. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.
7. Recheck the fluid level and add some if necessary. Do not fill the reservoir beyond the upper level line.
8. If the fluid is contaminated, dark, or discolored, repeat the procedure as necessary.

POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT

Note these items during installation:

- Connect each hose to the corresponding line securely until it contacts the stop on the line. Install the clamp or adjustable clamp at the specified distance from the hose end as shown.
- Check all clamps for deterioration or deformation; replace the clamps with new ones if necessary.
- Add the recommended power steering fluid to the specified level on the reservoir and check for leaks.

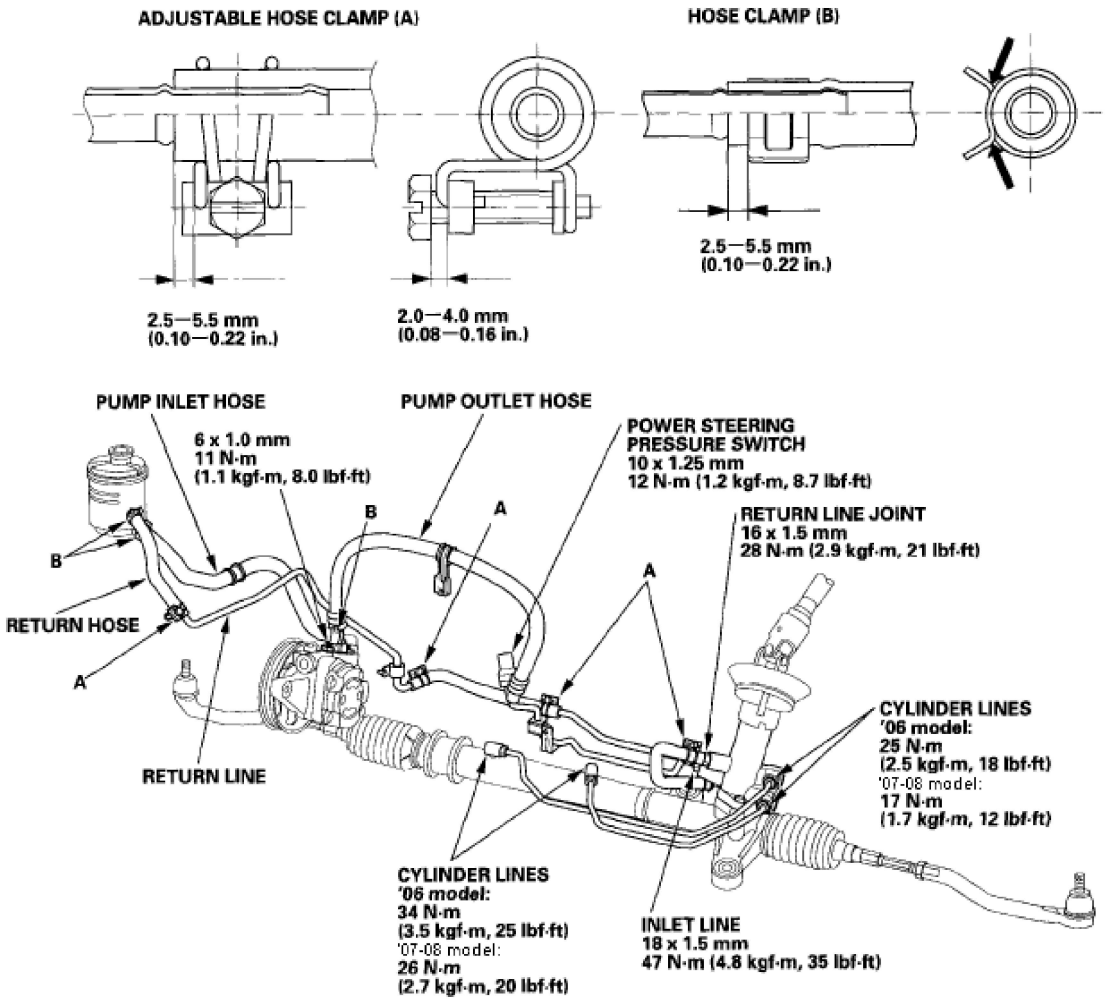

Fig. 13: Identifying Specified Distance From Hose (With Torque Specifications)

PUMP REPLACEMENT

1. Place a suitable container under the vehicle.
2. Drain the power steering fluid from the reservoir (see **FLUID REPLACEMENT**).
3. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
4. Remove the air cleaner (see **THROTTLE BODY CLEANING**).
5. Remove the front splash shield, 2-door (see **FRONT SPLASH SHIELD REPLACEMENT**), 4-door (see **4-DOOR**).

6. M/T model: Remove the shift cable bracket (A).

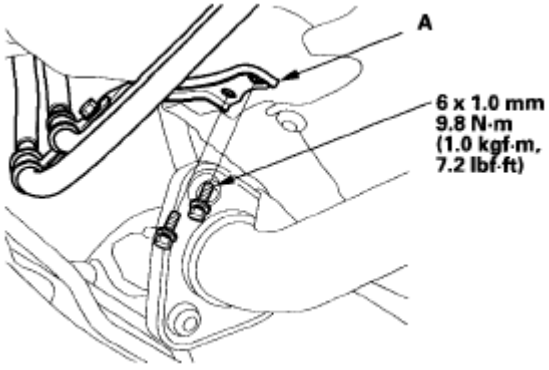

Fig. 14: Identifying Shift Cable Bracket (With Torque Specifications)

7. A/T model: Disconnect the shift cable from the control lever (see **SHIFT CABLE REPLACEMENT**).
8. Remove the upper torque rod mounting bolts (A) from the body.

NOTE: During installation, install new mounting bolts.

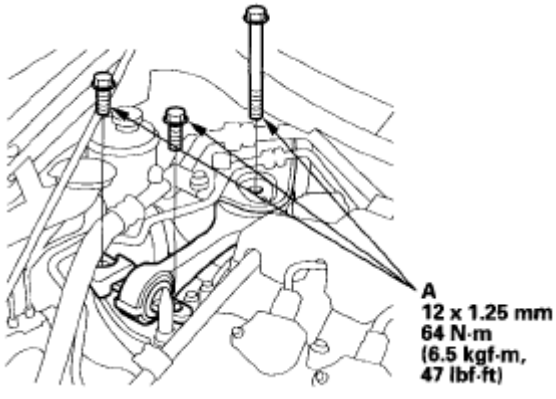

Fig. 15: Identifying Upper Torque Rod Mounting Bolts (With Torque Specifications)

9. Remove the drive belt (A) from the pump pulley (see **DRIVE BELT INSPECTION**).

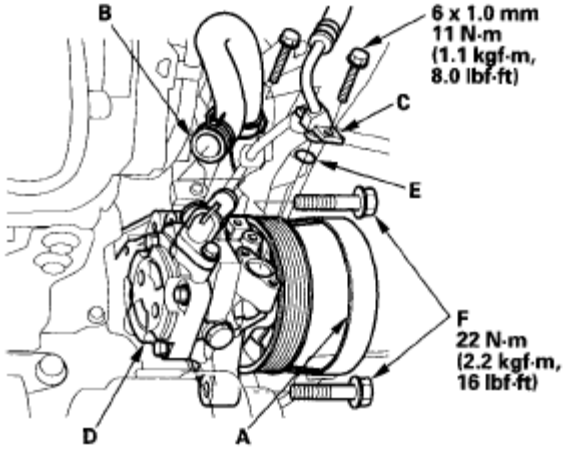

Fig. 16: Identifying Pump Outlet Hose, O-Ring And Pump Mounting Bolts (With Torque Specifications)

10. Cover the parts around the power steering pump with several shop towels to protect them from spilled power steering fluid.
11. Disconnect the pump inlet hose (B) and pump outlet hose (C) from the pump (D), and plug them. Take care not to spill the fluid on the body or on any parts. Wipe off any spilled fluid at once. Do not turn the steering wheel with the pump removed.
12. Remove the pump outlet hose O-ring (E), and discard it.
13. Remove the pump mounting bolts (F).
14. Cover the opening of the pump with a piece of tape to prevent foreign material from entering the pump.
15. Move the power steering pump toward the driver's side, then raise it.

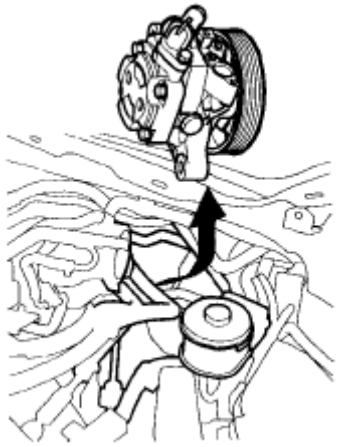

Fig. 17: Identifying Power Steering Pump

16. Connect the pump inlet hose and pump outlet hose onto the new pump with new a O-ring.
17. Loosely install the pump in the pump bracket with the mounting bolts, then tighten the pump fittings securely.
18. Tighten the pump mounting bolts to the specified torque.
19. Install the drive belt (A).

    Note these items during belt installation:

    - Make sure that the belt is properly positioned on the pulleys (B).
    - Do not get power steering fluid or grease on any parts around the power steering pump, drive belt, or pulley faces. Clean off any fluid or grease before installation.

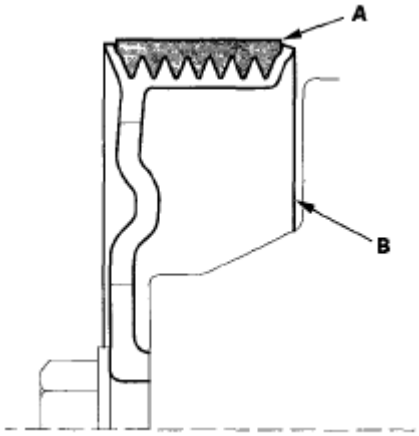

Fig. 18: Identifying Drive Belt

20. Reinstall all removed parts.
21. Fill the reservoir to the upper level line (see **FLUID REPLACEMENT**).

PUMP OVERHAUL

EXPLODED VIEW

Replace the pump as an assembly if the parts indicated with an asterisk (*) are worn or damaged.

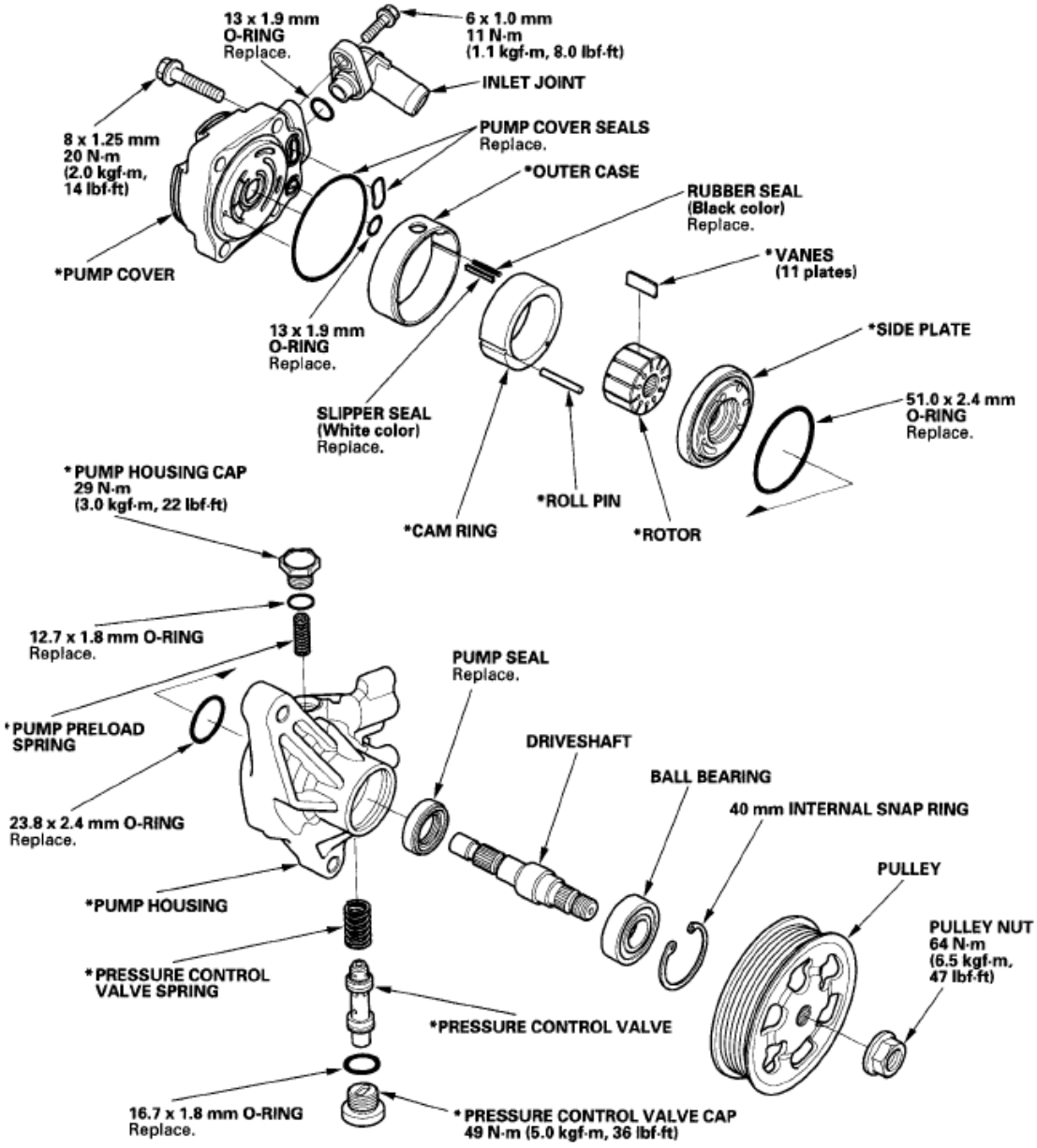

Fig. 19: Exploded View Of Power Steering Pump (With Torque Specifications)

Special Tools Required

- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Pulley holder 07ZAB-S5A0100

Disassembly

NOTE: Refer to the Fig. 19 as needed during the following procedure.

1. Drain the fluid from the pump (see **FLUID REPLACEMENT**).
2. Remove the power steering pump (see **PUMP REPLACEMENT**).
3. Hold the steering pump (A) in a vise with soft jaws (B), hold the pulley (C) with the pulley holder (D), and remove the pulley nut (E) and pulley. Be careful not to damage the pump housing with the jaws of the vise.

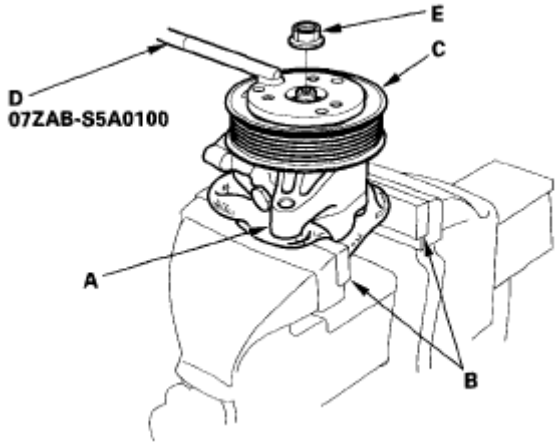

Fig. 20: Identifying Steering Pump In Vise

4. Remove the inlet joint and O-ring.
5. Remove the pressure control valve cap, O-ring, valve spring, and pressure control valve.
6. Remove the pump housing cap, O-ring, and pump preload spring.
7. Remove the pump cover, O-ring, and pump cover seals.
8. Pull out the roll pin.
9. Remove the outer case, cam ring, rotor, vanes, and side plate.
10. Remove the rubber seal and slipper seal from the outer case.
11. Remove the O-rings from the bottom of the housing.
12. Remove the 40 mm internal snap ring, then remove the driveshaft by tapping the shaft end with a plastic hammer.
13. Remove the seal from the pump housing.

Inspection

14. Check the pressure control valve for wear, burrs, and other damage to the edges of the grooves in the valve.

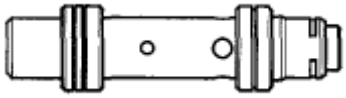

Fig. 21: Identifying Pressure Control Valve

15. Inspect the bore of the pressure control valve on the pump housing for scratches and wear.
16. Slip the pressure control valve back in the pump housing, and check that it moves in and out smoothly. If OK, go to step 17; if not, replace the pump as an assembly. The pressure control valve is not available separately.

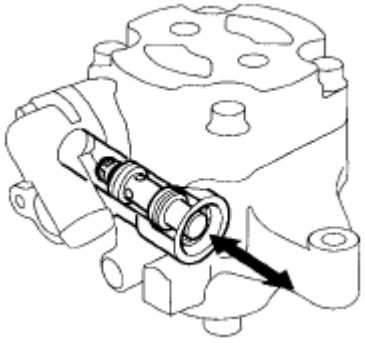

Fig. 22: Identifying Pressure Control Valve On Pump Housing

17. Attach a hose (A) to the end of the pressure control valve (B) as shown. Then submerge the pressure control valve in a container of power steering fluid or solvent (C), and blow in the hose.
    - If air bubbles leak through the valve at less than 98 kPa (1.0 kgf/cm^2, 14.2 psi), replace the pump as an assembly. The pressure control valve is not available separately.
    - If the pressure control valve is OK, set it aside for reassembly later.

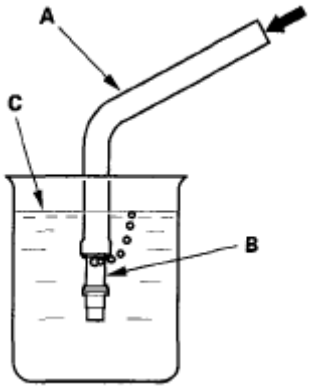

Fig. 23: Checking Pressure Control Valve

18. Inspect the ball bearing by rotating the outer race slowly. If you feel any play (axial or radial) or roughness, remove the faulty ball bearing (A), and install a new one (B).

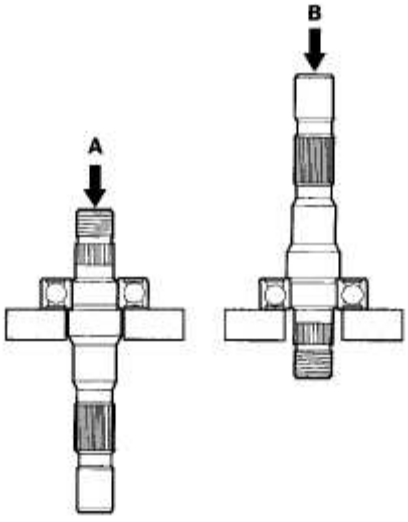

Fig. 24: Locating Ball Bearing

19. Inspect each part shown with an asterisk in the Exploded View; if any of them are worn or damaged, replace the pump as an assembly.

Reassembly

20. Install the new pump seal (A) (with its grooved side facing in) into the pump housing (B) by hand, then drive it in using the driver and the attachment until the seal is fully seated in the pump housing. Do not apply more than 1,370 N

(140 kgf, 308 lbf) of pressure.

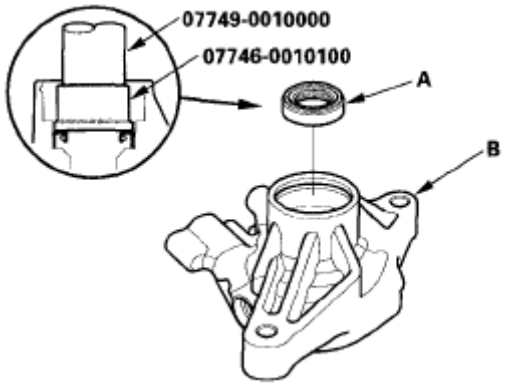

Fig. 25: Identifying Pump Seal On Pump Housing

21. Position the pump driveshaft (A) in the pump housing, then press it in with the appropriate size socket wrench (B) as shown.

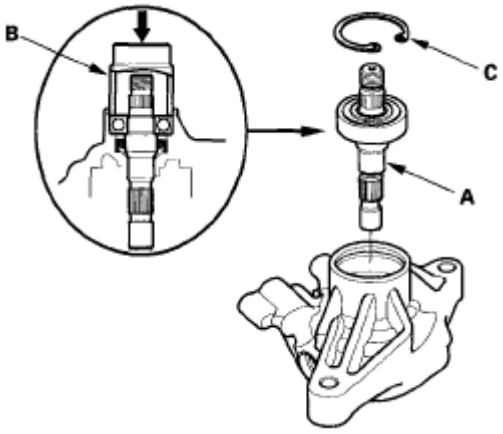

Fig. 26: Identifying Pump Driveshaft Position In Pump Housing

22. Install the 40 mm internal snap ring (C) with its radiused edge facing out.
23. Coat the new 23.8 mm O-ring (A) with power steering fluid, then position it on the bottom (B) of the pump housing.

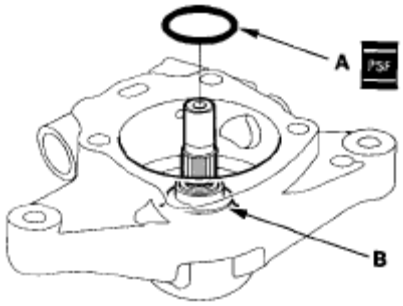

Fig. 27: Identifying O-Ring

24. Coat the new cover seals (A) and new 13.0 mm O-ring (B) with power steering fluid, then position them into the grooves on the cover (C).

NOTE: Be careful not to install the inlet joint O-ring because they are same size.

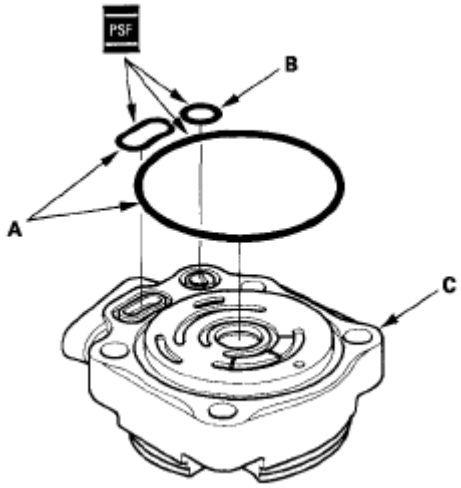

Fig. 28: Identifying O-Ring Position Into Grooves On Cover

25. Install the outer case (A) by aligning the slot (B) inside the outer case with the cover roll pin hole (C). Be sure that the tapered side (D) of outer case is facing up.

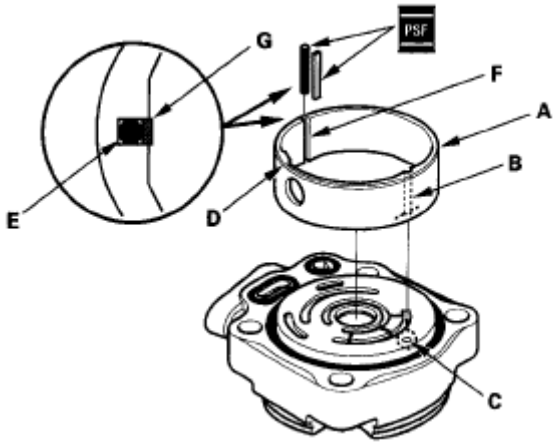

Fig. 29: Identifying Area Applying Rubber Seal

26. Apply power steering fluid to the rubber seal (E) (black), and install it in the slot (F) of the outer case.
27. Apply power steering fluid to the slipper seal (G) (white), and install it on top of the rubber seal you just installed.
28. Install the cam ring (A) by aligning the slot (B) with the slot (C) in the outer case.

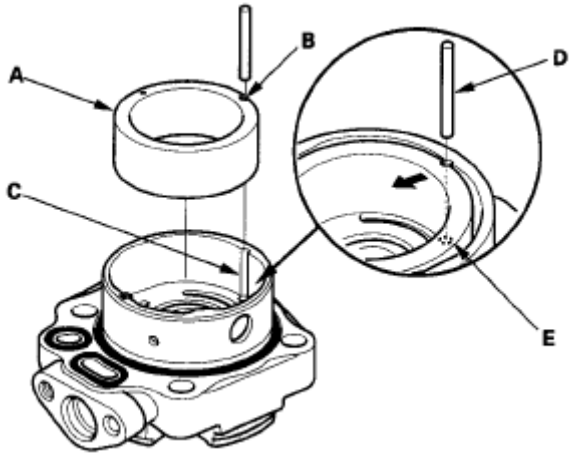

Fig. 30: Locating Slot In Outer Case

29. Insert the roll pin (D) into the slots between the cam ring and outer case, then push the roll pin into the set hole (E).
30. Install the rotor (A) in the cam ring (B).

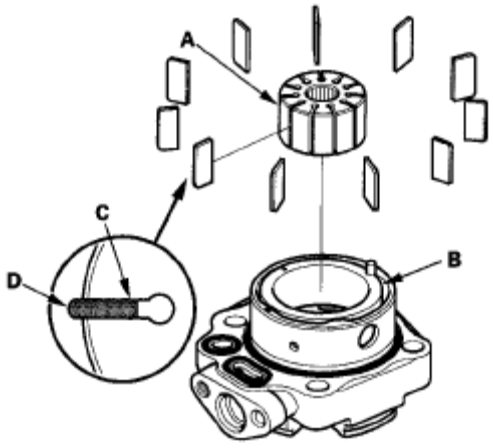

Fig. 31: Identifying Rotor And Cam Ring

31. Set the 11 vanes (C) in the grooves in the rotor. Make sure that the round ends (D) of the vanes are in contact with the sliding surface of the cam ring.
32. Place the side plate (A) on the cam ring, and align the roll pin set hole (B) with the roll pin (C).

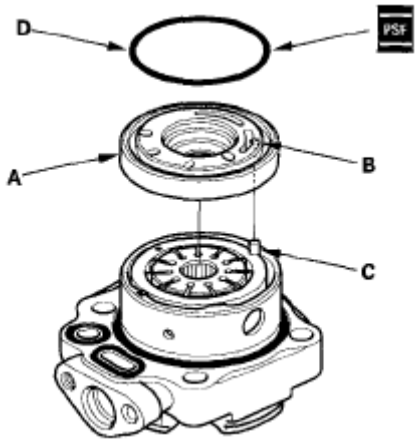

Fig. 32: Identifying Align Roll Pin Set Hole With Roll Pin

33. Coat the new O-ring (D) with power steering fluid, then position it into the groove on the side plate.
34. Install the pump housing (A) over the cover assembly (B).

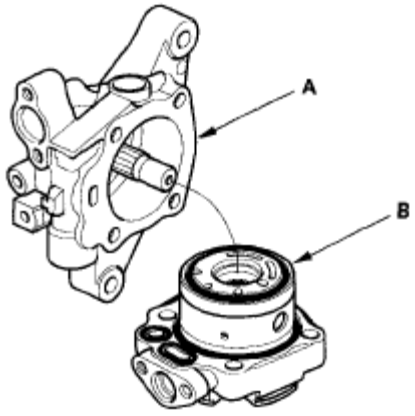

Fig. 33: Identifying Pump Housing And Cover Assembly

35. Align the bolt holes in the cover (A) with the threaded holes in the pump housing. Install the flange bolts loosely first, then torque the flange bolts in a criss-cross pattern in two or more steps.

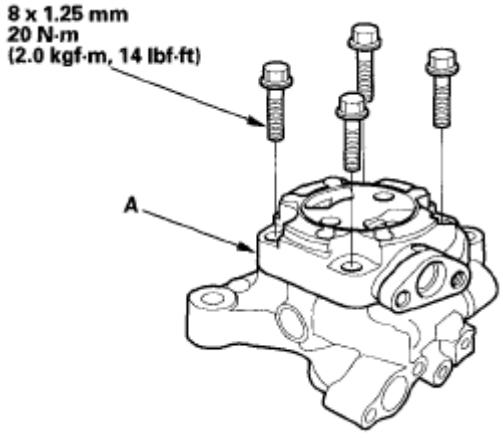

Fig. 34: Identifying Align Bolt Holes In Cover (With Torque Specifications)

36. Push in the cam ring (A) from the pump housing cap hole (B) with a flat-tip screwdriver to make sure the cam ring is fully seated against the outer case.

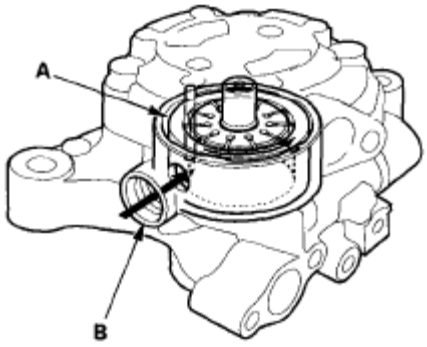

Fig. 35: Locating Push Cam Ring From Pump Housing Cap Hole

37. Install the pump preload spring (A) in the pump housing.

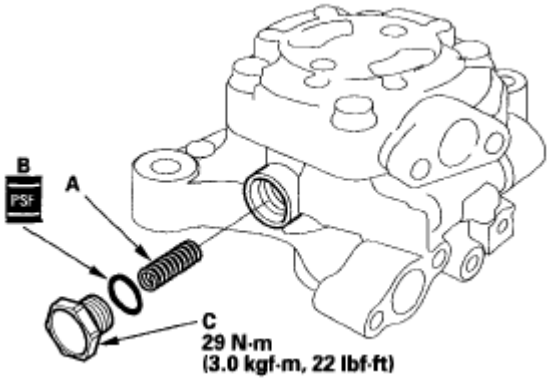

Fig. 36: Identifying Pump Preload Spring (With Torque Specifications)

38. Coat the new 12.7 mm O-ring (B) with power steering fluid, and install it on the pump housing cap (C).
39. Install the pump housing cap on the pump housing, and tighten it to the specified torque.
40. Install the pressure control valve spring (A) in the pump housing.

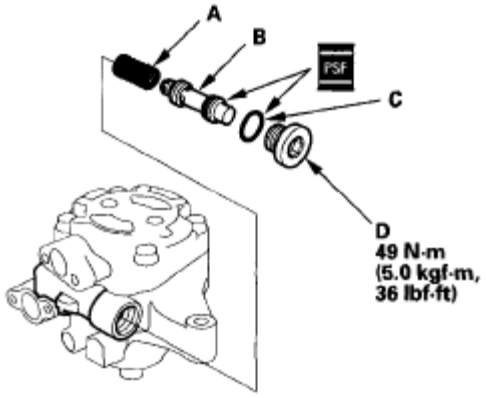

Fig. 37: Identifying Pressure Control Valve Spring (With Torque Specifications)

41. Coat the pressure control valve (B) with power steering fluid, and install it in the pump housing.
42. Coat the new 16.7 mm O-ring (C) with power steering fluid, and install it on the pressure control valve cap (D).
43. Install the pressure control valve cap on the pump housing, and tighten it to the specified torque.
44. Coat the new O-ring (A) with power steering fluid, and install it on the inlet joint (B).

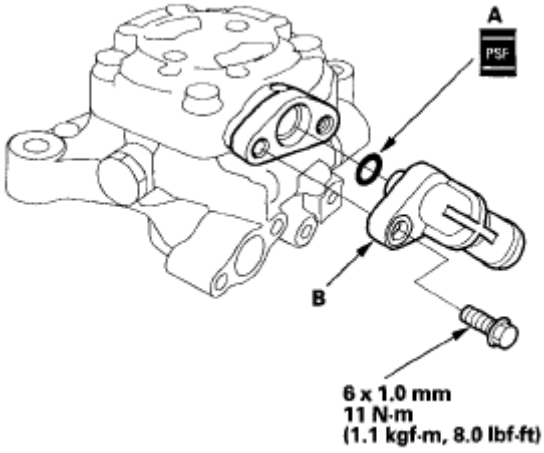

Fig. 38: Identifying Power Steering Fluid O-Ring (With Torque Specifications)

45. Install the inlet joint on the pump housing.

46. Install the pulley (A), then loosely install the pulley nut (B). Hold the steering pump in a vise with soft jaws (C). Be careful not to damage the pump housing with the jaws of the vise.

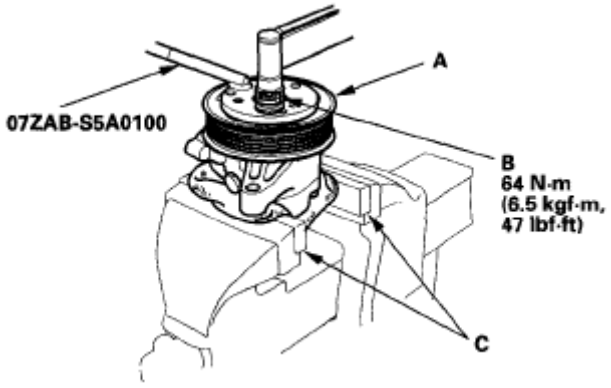

Fig. 39: Identifying Steering Pump In Vise (With Torque Specifications)

47. Hold the pulley with the pulley holder, and tighten the pulley nut to the specified torque.
48. Check that the pump turns smoothly by turning the pulley. If it is hard to turn, loosen the four flange bolts on the cover, then retighten them as in step 35, and check the pump again.

STEERING GEARBOX REMOVAL

Special Tools Required

- 1.8 Support eyelet 07AAK-SNAA400
- 1.8 Support bolt 07AAK-SNAA500
- Ball joint remover, 28 mm 07MAC-SLOA202
- Front subframe adaptor VSB02C000016 *
- 2006 Civic engine hanger VSB02C000025 *
- Engine support hanger, A and Reds AAR-T-12566 *

  Available through the American Honda Tool and Equipment program, 1-888-424-6857.

Note these items during removal:

- Using solvent and a brush, wash any oil and dirt off the valve body unit, it's lines, and the end of the steering gearbox. Blow dry with compressed air.
- Be sure to remove the steering wheel before disconnecting the steering joint. Damage to the cable reel can occur.

1. Drain the power steering fluid (see **FLUID REPLACEMENT**).
2. Make sure you have the anti-theft code for the audio or navigation system, then write down the audio presets.
3. Make sure the ignition switch is in LOCK (0), then disconnect the negative cable from the battery.
4. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).
5. Remove the driver's dashboard undercover (see **DRIVER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
6. Remove the steering joint cover (A).

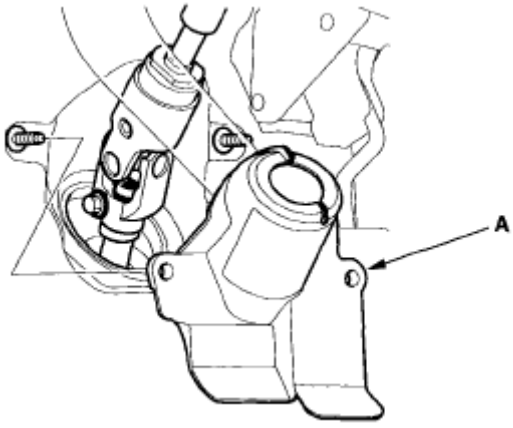

Fig. 40: Identifying Steering Joint Cover

7. Hold the lower slide shaft (A) on the column with a piece of wire (B) between the joint yoke (C) of the lower slide shaft and joint yoke (D) of the upper shaft to prevent the slider shaft from pulling out.

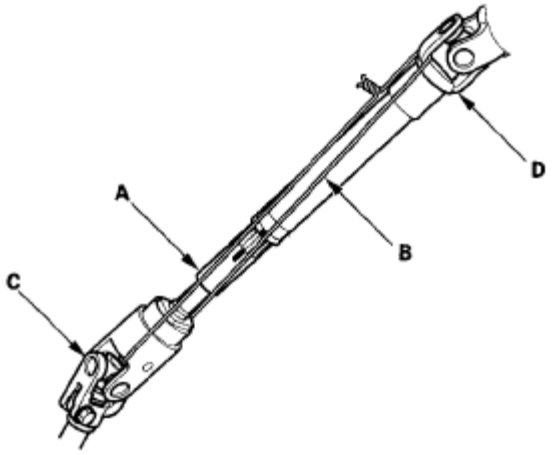

Fig. 41: Identifying Lower Slide Shaft With Wire Between Joint Yokes

8. Release the lock lever, and adjust the steering column to the full telescopic out position, then tighten the lock lever.
9. Remove the steering joint bolt (A), and disconnect the steering joint by moving the steering joint (B) toward the column..

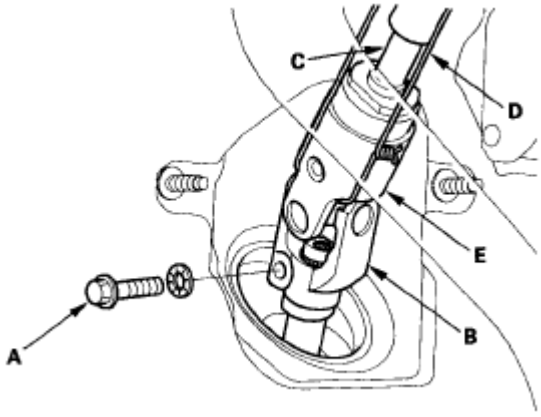

Fig. 42: Identifying Steering Joint Bolt

10. Remove the center guide (A) (if equipped), and discard it. The center guide is for factory assembly only.

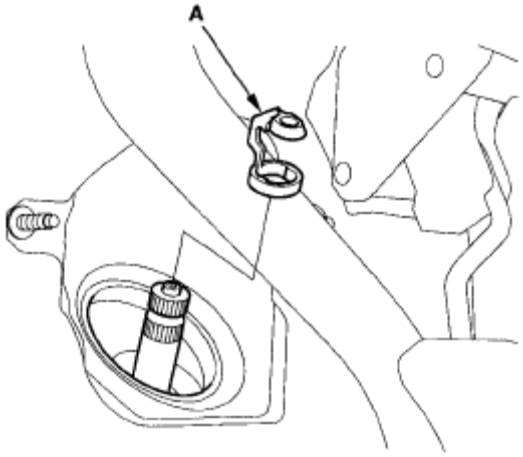

Fig. 43: Identifying Center Guide

11. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
12. Remove the air cleaner housing (see **THROTTLE BODY CLEANING**).
13. Remove the air cleaner housing mounting bracket (A), and install support eyelet (B) behind the breather pipe (C) and down to the threaded hole (D) on the cylinder head.

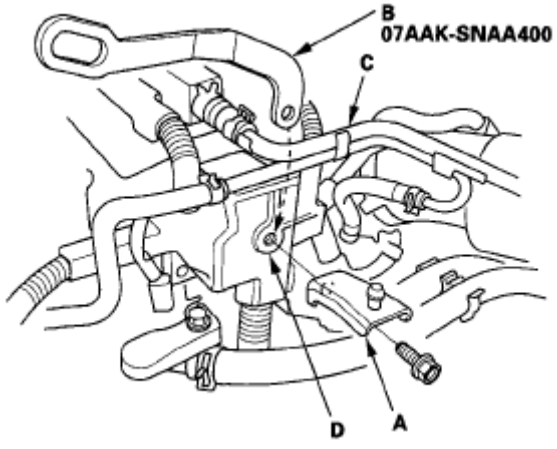

Fig. 44: Identifying Mounting Bracket And Support Eyelet

14. Attach the support eyelet (A) to the cylinder head with the support bolt (B). Tighten the bolt by hand.

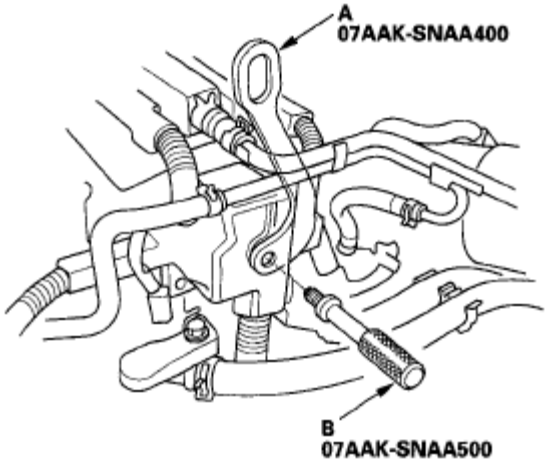

Fig. 45: Identifying Support Eyelet And Support Bolt

15. Install the front leg assembly (A), hook (B), and wing nut (C) from an A and Reds engine support hanger (AAR-T-12566) onto the engine hanger. Carefully position the engine hanger on the vehicle, and attach the hook to the slotted hole in the support eyelet (D). Tighten the wing nut by hand to lift and support the engineltransmission assembly.

NOTE: Use care when working around the windshield.

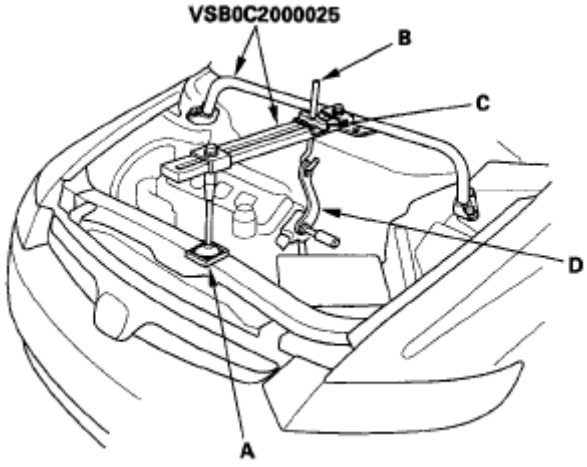

Fig. 46: Identifying Special Tool

16. Remove the pump outlet hose clamp (A) from the intake manifold.

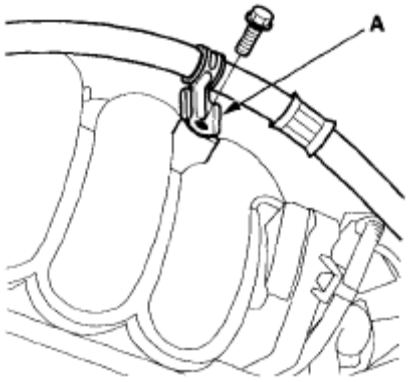

Fig. 47: Identifying Steering Joint Cover

17. Raise the front of vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
18. Remove the front wheels.
19. Remove the cotter pin (A) from the 12 mm nut (B), and loosen the nut.

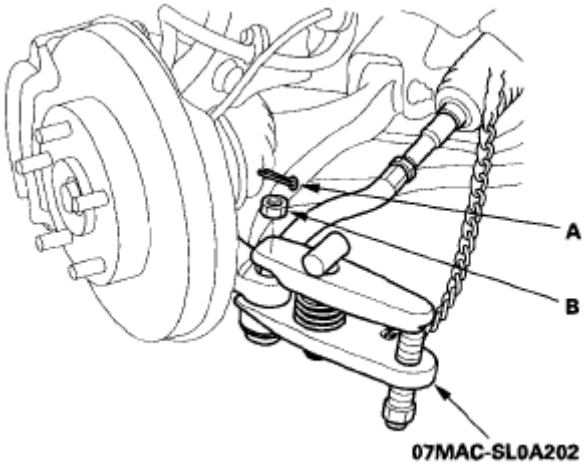

Fig. 48: Identifying Tie-Rod Cotter Pin And Nut

20. Separate the tie-rod ball joint and knuckle using the ball joint remover (see **BALL JOINT REMOVAL**).
21. Remove the inlet line clamp bolt (A).

    Open the return line holder (B), and remove the return line clamp bolt (C).

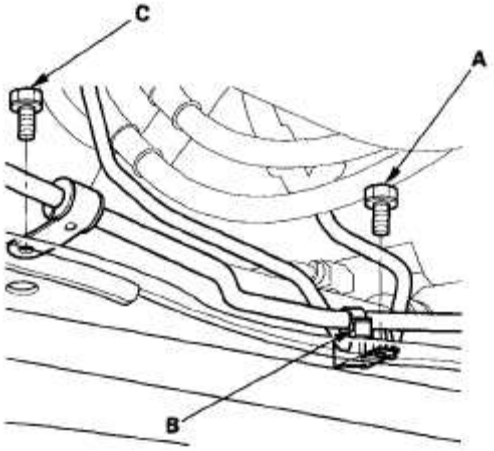

Fig. 49: Identifying Inlet Line Clamp Bolt And Return Line Clamp Bolt

22. Loosen the adjustable hose clamp (A), and disconnect the return hose (B).

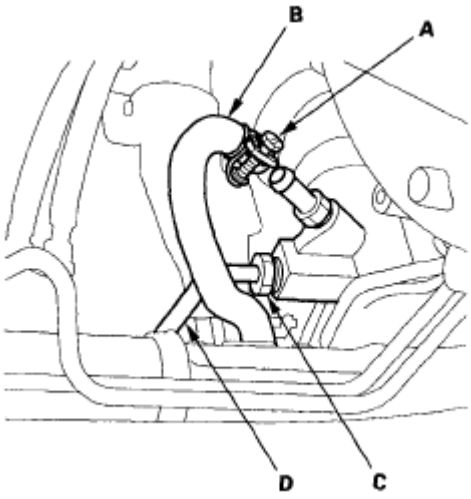

Fig. 50: Identifying Adjustable Hose Clamp

23. Loosen the 18 mm flare nut (C), and disconnect the inlet line (0).
24. Remove the front splash shield, 2-door (see **FRONT SPLASH SHIELD REPLACEMENT**), 4-door (see **4-DOOR**).
25. Remove the lower ball joint mounting bolt (A) and flange nuts (B) from the lower arm.

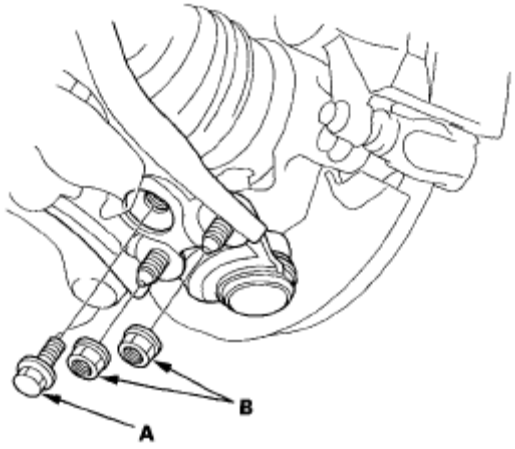

Fig. 51: Identifying Lower Ball Joint Mounting Bolt And Flange Nuts

26. Disconnect the lower arm from the lower ball housing.
27. Note the reference marks (A) on both sides of the subframe that line up with the body (B).

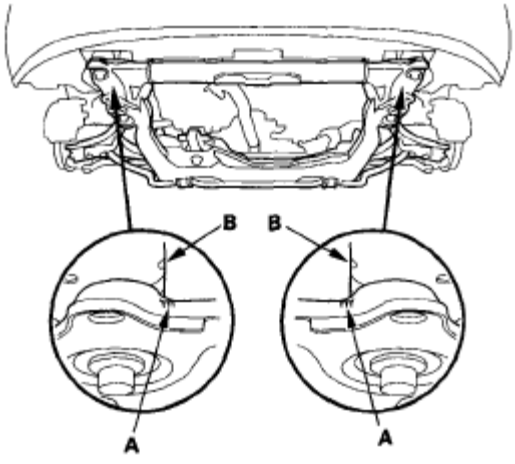

Fig. 52: Identifying Mark On Lower Arm

28. Attach the front subframe adaptor (A) to the front subframe (B) and the transmission jack (model number LSL-W9371) or the powertrain lift (model number OTC-1585), then tighten the front subframe adaptor screw.

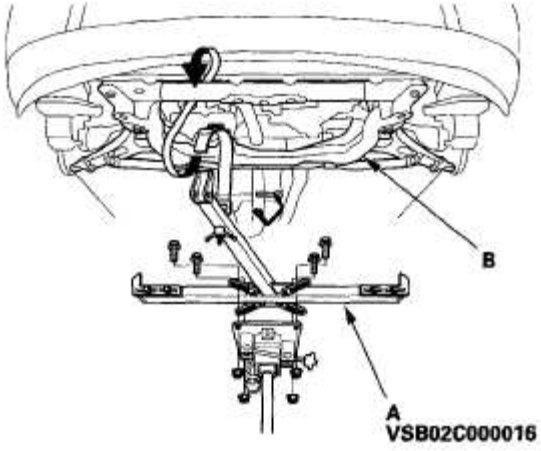

Fig. 53: Locating Jack

29. Make sure the front subframe is securely supported by the jack with the front subframe adaptor.
30. Remove the front subframe middle mount bolt (A) from the left side.

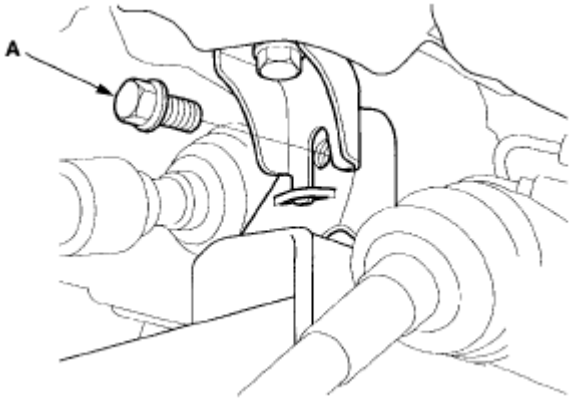

Fig. 54: Locating Front Subframe Middle Mount Bolt - Left Side

31. Remove the front subframe middle mount bolt (A) from the right side.

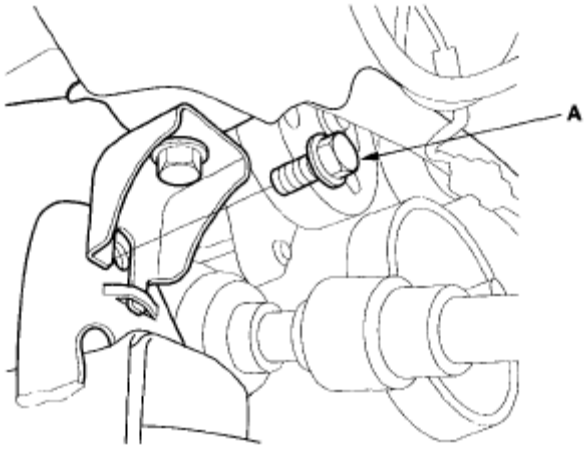

Fig. 55: Locating Front Subframe Middle Mount Bolt - Right Side

32. Remove the two 12 mm flange bolts (A) from the lower torque rod bracket.

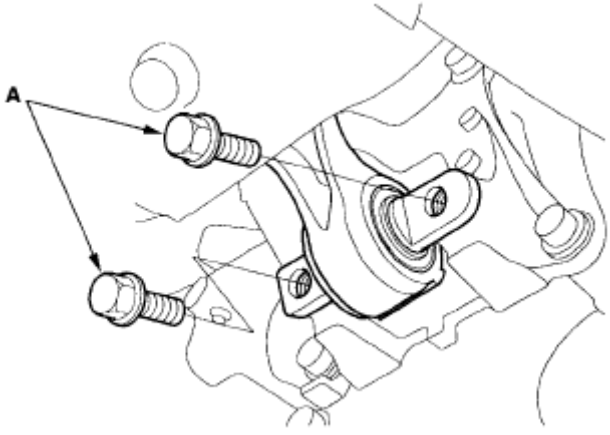

Fig. 56: Identifying Lower Torque Rod Bracket Flange Bolts

33. Remove the front subframe front mounting bolts (A) from the right and left sides of the vehicle and discard them.

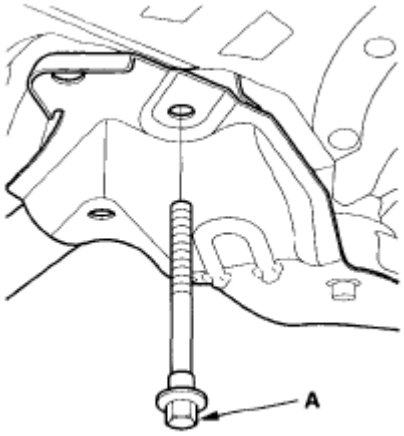

Fig. 57: Identifying Front Subframe Front Mounting Bolts

34. Remove the front subframe rear mounting bolts (A) from the right and left sides of the vehicle and discard them.

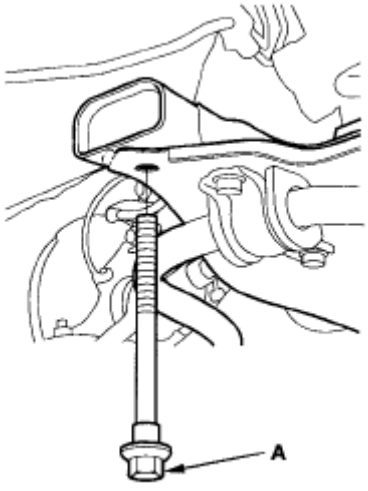

Fig. 58: Identifying Front Subframe Rear Mounting Bolts

35. Lower the front subframe and steering gearbox as an assembly by lowering the jack slowly.
36. Remove the pinion shaft grommet (A) from the top of the valve body unit.

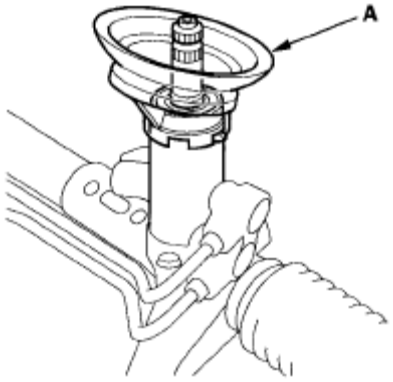

Fig. 59: Identifying Pinion Shaft Grommet

37. Remove the two 10 mm bolts from the right side of the steering gearbox, then remove the gearbox mounting bracket (A) and mounting cushion (B).

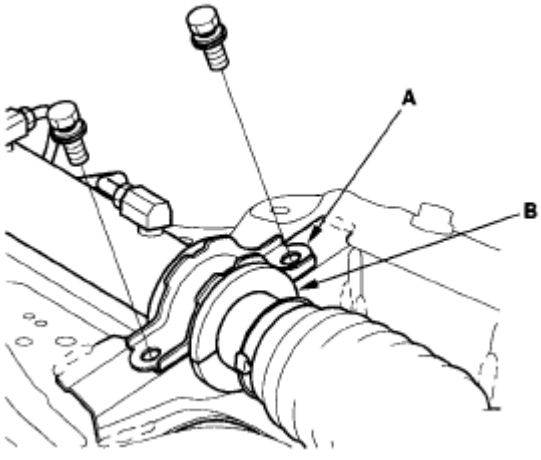

Fig. 60: Identifying Gearbox Mounting Bracket And Mounting Cushion

38. Remove the four 10 mm flange bolts from the left side of the steering gearbox, then remove the stiffener plates (A).

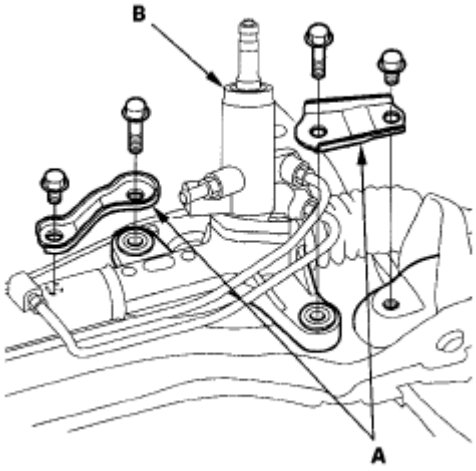

Fig. 61: Identifying Stiffener Plates

39. Remove the steering gearbox (B) from the front subframe.

STEERING GEARBOX OVERHAUL

EXPLODED VIEW

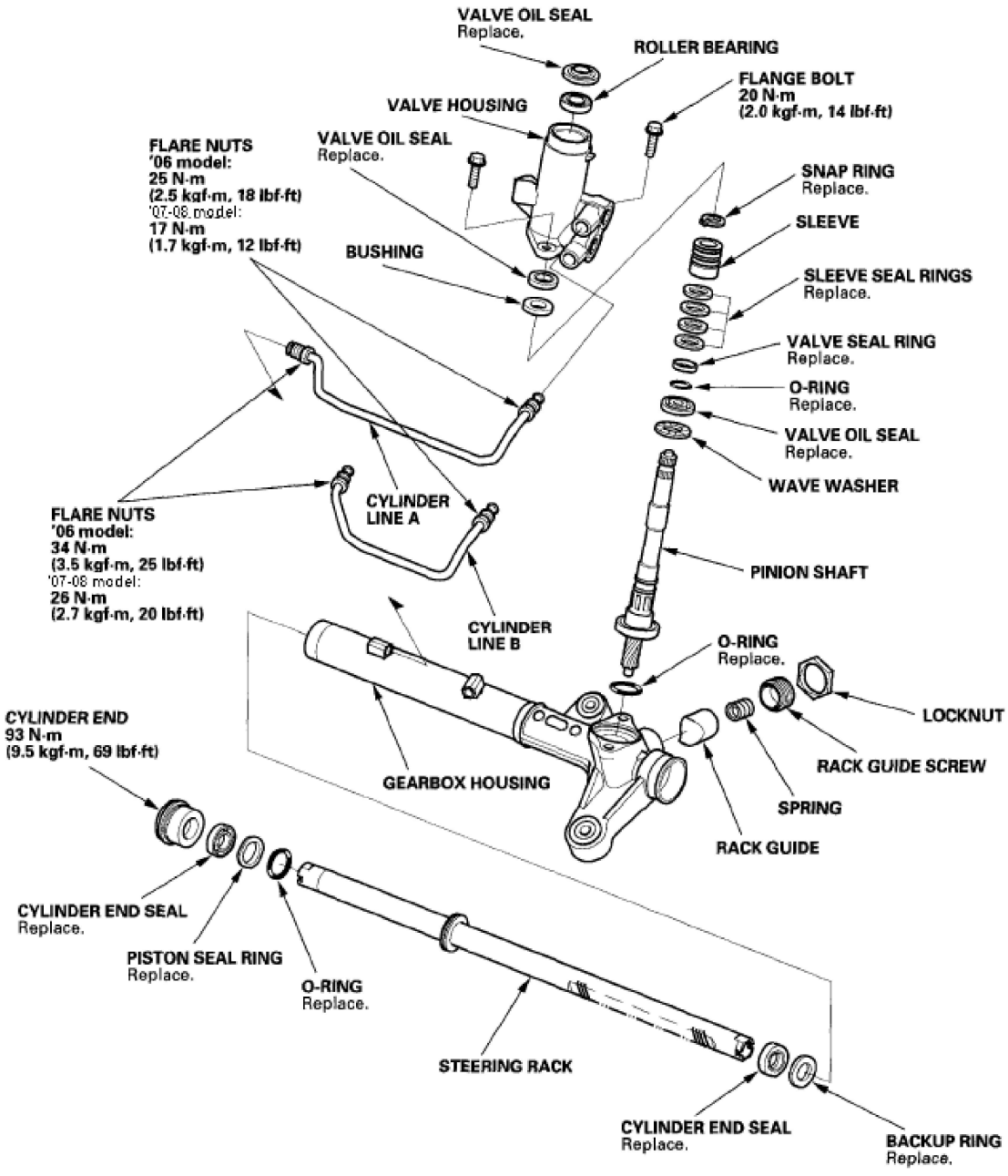

Fig. 62: Exploded View Of Steering Gearbox (With Torque Specifications)

Special Tools Required

- Cylinder end seal remover attachment 07NAD-SR3020A
- Valve seal ring sizing tool 07NAG-SR3090A
- Sleeve seal ring guide 07YAG-S2X0100
- Sleeve seal ring sizing tool, 36 mm 07ZAG-S5A0100

- Attachment, 32 x 35 mm 07746-0010100
- Attachment, 42 x 47 mm 07746-0010300
- Driver 07749-0010000
- Piston seal ring guide 07HAG-SF10100
- Piston seal ring sizing tool 07HAG-SF1020A or 07HAG-SF10200
- Cylinder end seal slider 07ZAG-S5A0300
- Pincers Oetiker 1098 or equivalent, commercially available

NOTE: Refer to the Fig. 62 as needed during this procedure.

Removal

1. Remove the steering gearbox (see **STEERING GEARBOX OVERHAUL**).

   Disassembly

2. Remove the boot bands (A) and tie-rod clips (B). Pull the boot away from the ends of the steering gearbox.

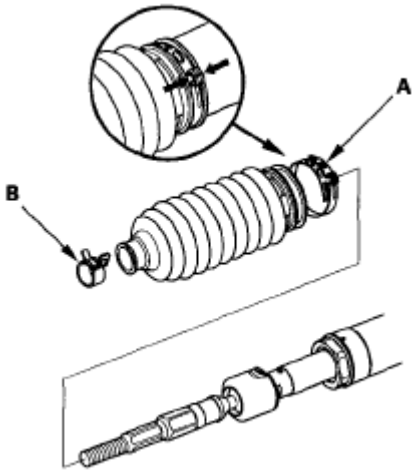

Fig. 63: Identifying Boot Bands And Tie-Rod Clips

3. Unbend the lock washers (A).

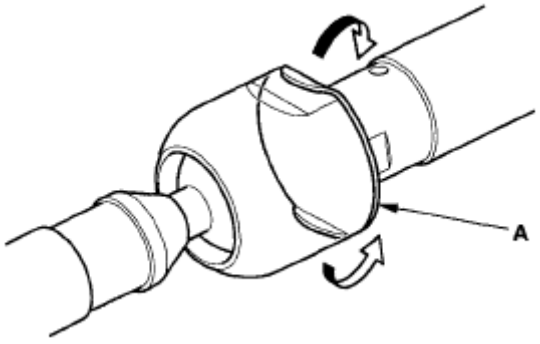

Fig. 64: Identifying Lock Washers

4. Hold the flat surface sections (A) of the steering rack with a wrench (B), and unscrew both rack ends (C) with a wrench (D). Be careful not to damage the rack surface with the wrench.

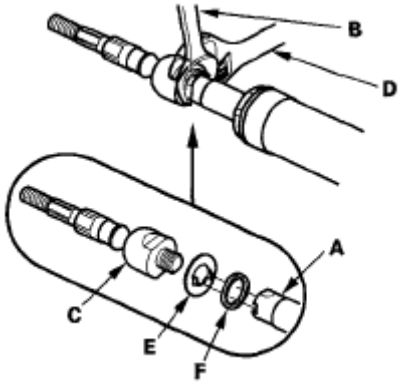

Fig. 65: Identifying Lock Washer And Rubber Stop

5. Remove the lock washer (E) and rubber stop (F).
6. Loosen the locknut (A), then remove the rack guide screw (B).

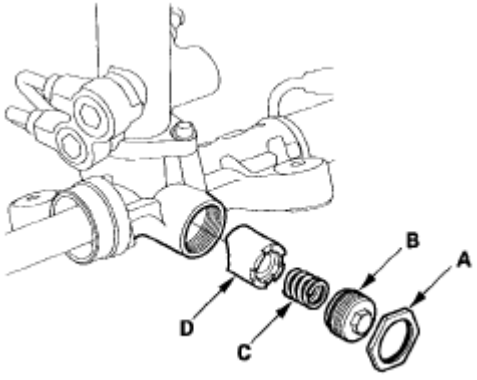

Fig. 66: Identifying Locknut, Rack Guide Screw, Spring And Rack Guide

7. Remove the spring (C) and the rack guide (D) from the gearbox housing.
8. Remove the cylinder line A and B from the steering gearbox.

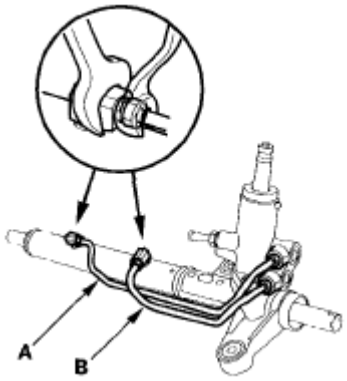

Fig. 67: Identifying Cylinder Line A And B

9. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.
10. Remove the two flange bolts, then remove the valve body unit (A) from the steering gearbox (B). Remove the O-ring (C), and discard it.

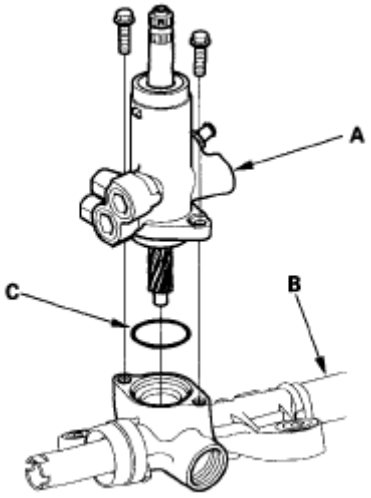

Fig. 68: Identifying Valve Body Unit Components

11. Drill a 3 mm (0.12 in.) diameter hole about 2.5-3.0 mm (0.10-0.12 in.) in depth in the staked point (A) on the cylinder. Do not allow metal shavings to enter

the cylinder side on the gearbox housing. After removing the cylinder end (B), remove any burrs at the staked point.

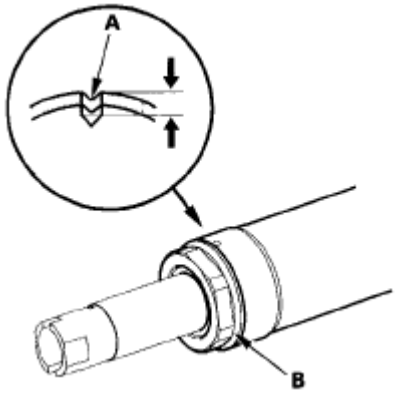

Fig. 69: Identifying Depth In Staked Point On Cylinder

12. Hold the gearbox housing using a C-clamp (commercially available) (A) and the wooden blocks (B) as shown. Do not clamp the cylinder part of the gearbox housing in the vise. Then remove the cylinder end (C).

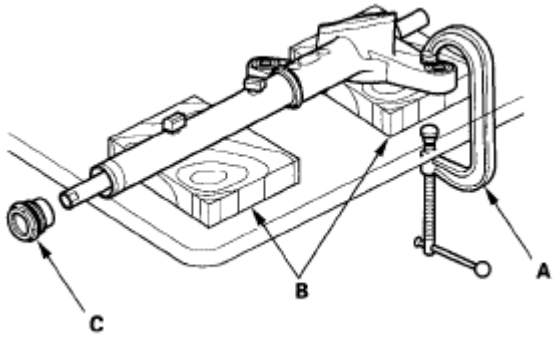

Fig. 70: Identifying Gearbox Housing

13. Install a commercially available bearing separator (A) in the gearbox housing as shown.

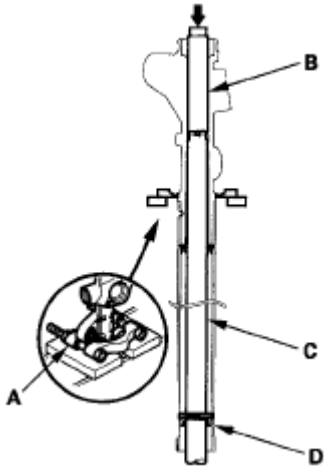

Fig. 71: Identifying Gearbox Housing

14. Place an appropriate size deep socket wrench (B) on the steering rack (C).
15. Set the steering gearbox in a press so the gearbox housing side points upward, then press the cylinder end seal (D) and steering rack out of the steering gearbox. Hold the steering rack to keep it from falling when pressed clear. Be careful not to damage the inner surface of the cylinder side on the gearbox housing with the tool.
16. Install the seal remover on a 24 "long 3/8" drive extension (A). Insert the tools in the gearbox housing. Make sure the seal remover is securely positioned on the backup ring edges. Be careful not to damage the inner surface of the cylinder with the seal remover.

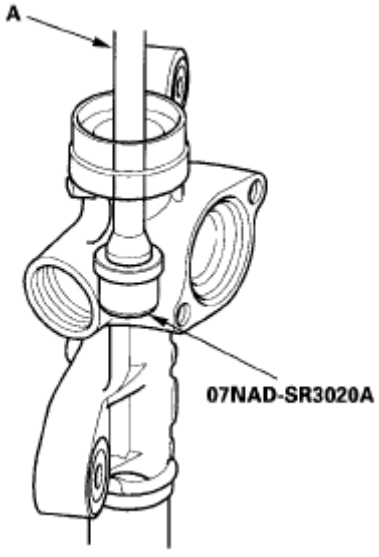

Fig. 72: Inserting Tools In Gearbox Housing

17. Place the steering gearbox in a press, then remove the cylinder end seal (A) and backup ring (B) from the steering gearbox by pressing on the 24 "long, 3/8" drive extension.

    Note these items when pressing the cylinder end seal:

    - Keep the tool straight to avoid damaging the cylinder wall. Check the tool angle, and correct it if necessary, when removing the cylinder end seal.
    - Use a press to remove the cylinder end seal. Do not try to remove the seal by striking the tool; striking the tool would break the backup ring, and the cylinder end seal would remain in the steering gearbox.

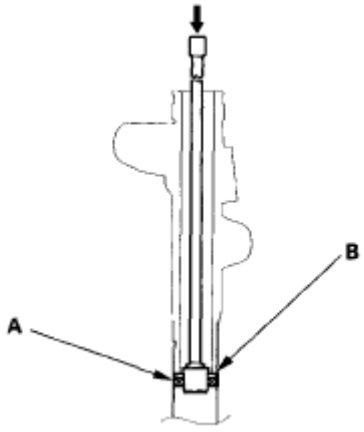

Fig. 73: Identifying Cylinder Seal And Backup Ring

18. Carefully pry the piston seal ring (A) and O-ring (B) off the rack piston. Be careful not to damage the inside of the seal ring groove and piston edges when removing the seal ring.

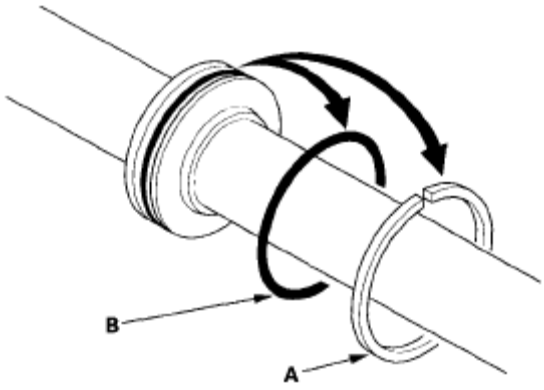

Fig. 74: Locating Piston Seal Ring And O-Ring

19. Before removing the valve housing (A), apply vinyl tape (B) to the splines on the pinion shaft.

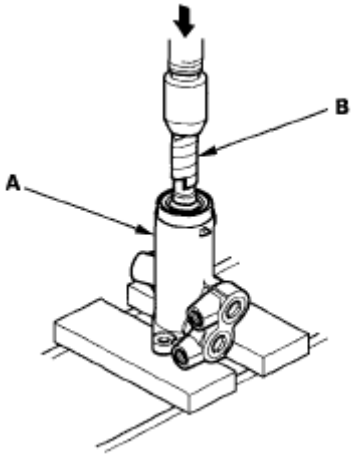

Fig. 75: Identifying Vinyl Of Splines On Pinion Shaft

20. Separate the valve housing from the pinion shaft/valve using a press.
21. Loosen the 16 mm flange nut (A), and remove the return line joint (B).

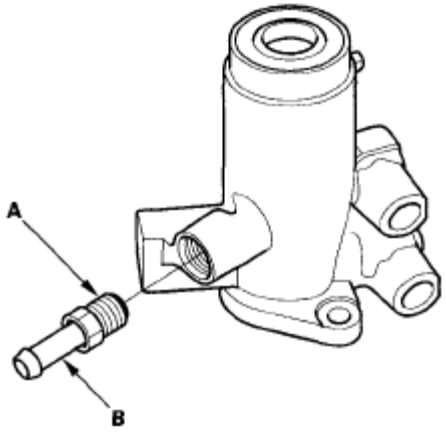

Fig. 76: Identifying Flange Nut And Return Line Joint

22. With your finger, check the inner wall of the valve housing where the seal ring slides. If there is a step in the wall, the housing is worn. Replace it.

NOTE: There may be sliding marks from the seal ring on the wall of the valve housing. Replace the valve housing only if the wall is stepped.

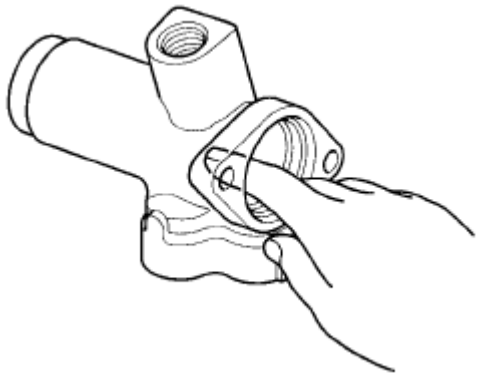

Fig. 77: Identifying Inner Wall Of Valve Housing With Your Finger

23. Check for wear, burrs, and other damage to the edges of the grooves in the sleeve.

NOTE: The pinion shaft and sleeve are a precision matched set. If either the pinion shaft or sleeve must be replaced, replace both parts as a set.

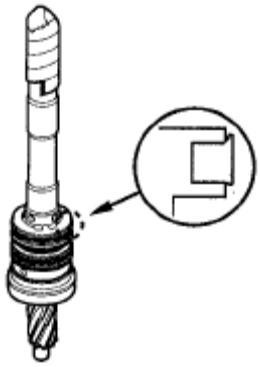

Fig. 78: Identifying Pinion Shaft And Sleeve

24. Remove the snap ring (A) and sleeve (B) from the pinion shaft.

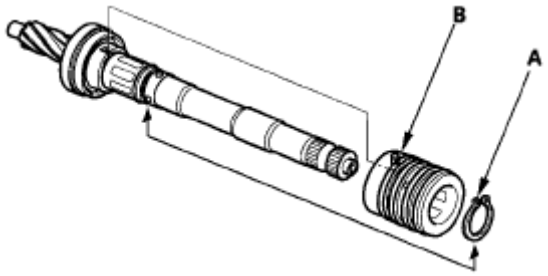

Fig. 79: Identifying Snap Ring And Sleeve

25. Using a cutter or an equivalent tool, cut and remove the four seal rings from the sleeve. Be careful not to damage the edges of the sleeve grooves and outer surface when removing the seal rings.

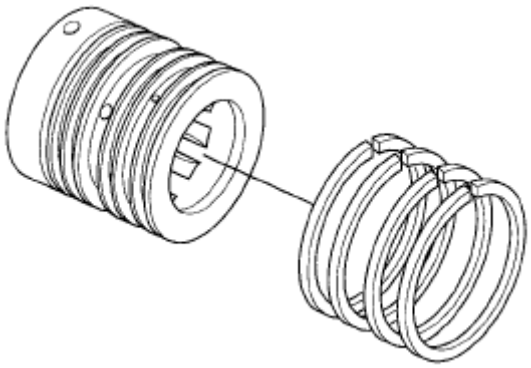

Fig. 80: Identifying Seal Rings

26. Using a cutter or an equivalent tool, cut the valve seal ring (A) and O-ring (B)

at the cutting groove position (C) in the pinion shaft. Remove the valve seal ring and O-ring. Be careful not to damage the edges of the pinion shaft groove and outer surface when removing the valve seal ring and O-ring.

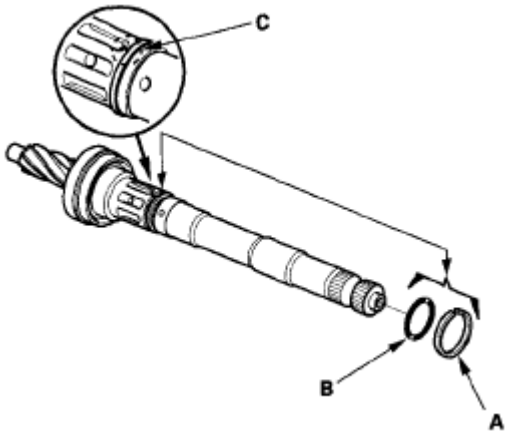

Fig. 81: Identifying Valve Seal Ring And O-Ring

27. Remove the valve oil seal (A) and wave washer (B) from the pinion shaft.

    Note these items during disassembly:

    - Inspect the ball bearing (C) by rotating the outer race slowly. If there is any excessive play or wear, replace the pinion shaft and sleeve as an assembly.
    - The pinion shaft and sleeve are a precise fit; do not intermix old and new pinion shafts and sleeves.

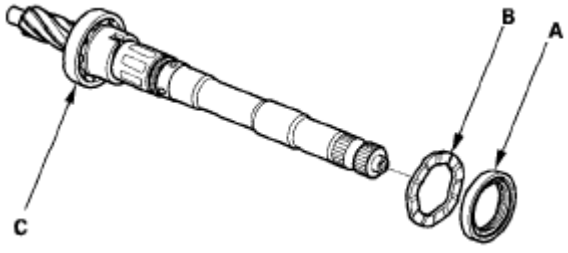

Fig. 82: Identifying Valve Oil Seal And Wave Washer

28. Remove the valve oil seal (A) and roller bearing (B) from the valve housing using a flat-tipped screw driver.

NOTE: Be careful not to damage the inner wall of the valve housing when removing by the flat-tipped screw driver.

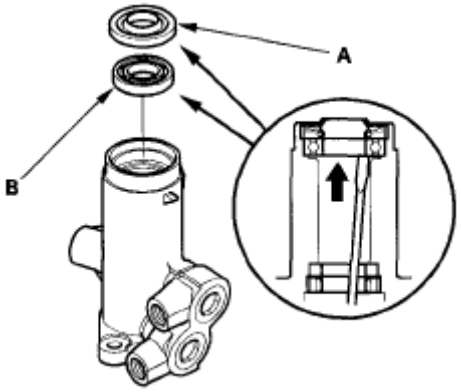

Fig. 83: Identifying Valve Oil Seal And Roller Bearing From Valve Housing

29. Remove the valve oil seal (A) and bushing (B) out of the valve housing using a hydraulic press and an appropriate size socket wrench.

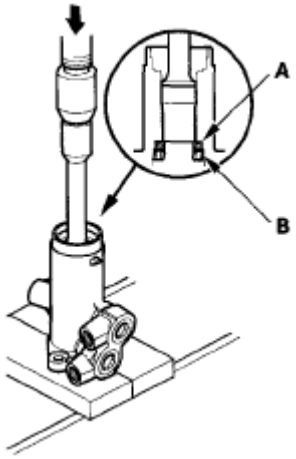

Fig. 84: Identifying Valve Oil Seal And Bushing Out Of Valve Housing

30. Clean the disassembled parts with solvent, and dry them with compressed air. Do not dip rubber parts in the solvent.

Reassembly

31. Apply vinyl tape (A) to the stepped portion of the pinion shaft, and coat the

surface of the vinyl tape with power steering fluid.

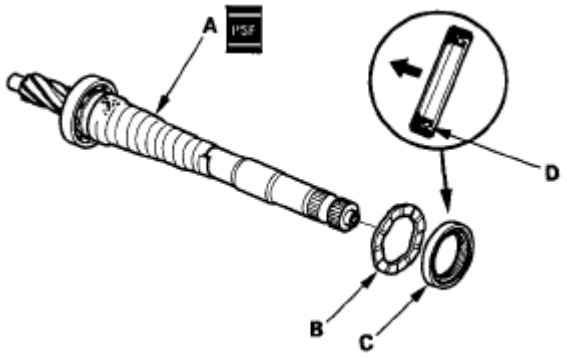

Fig. 85: Identifying Area Applying Vinyl Tape To Pinion Shaft

32. Install the wave washer (B).
33. Coat the inside surface of the new valve oil seal (C) with power steering fluid, and install the seal with its grooved side facing opposite the bearing, then slide it over the pinion shaft, being careful not to damage its sealing lip (D).
34. Apply vinyl tape (A) to the splines and stepped portion of the shaft, and coat the surface of the vinyl tape with power steering fluid.

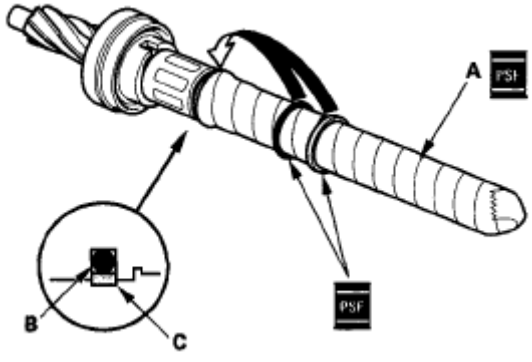

Fig. 86: Identifying Area Applying Vinyl Tape To Splines

35. Fit the new O-ring (B) in the groove of the pinion shaft. Then slide the new valve seal ring (C) over the shaft and in the groove on the pinion shaft.
36. Remove the tape, and apply power steering fluid to the surface of the valve seal ring (A).

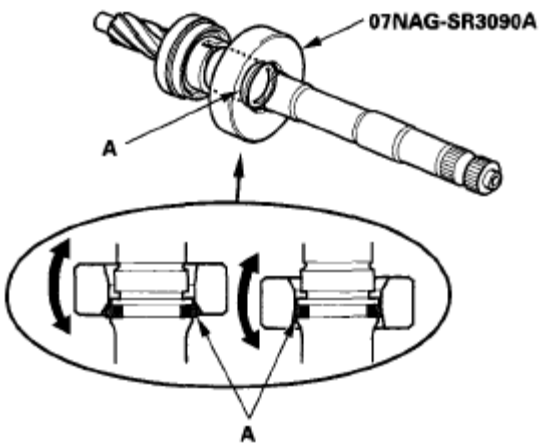

Fig. 87: Identifying Area Applying Power Steering Fluid To Surface Of Valve Seal Ring

37. Apply power steering fluid to the inside of the valve seal ring sizing tool. Set the larger diameter end of the sizing tool over the valve seal ring, and move the sizing tool up and down several times to make the valve seal ring fit in the pinion shaft groove.
38. Remove the sizing tool, turn it over, slide the smaller diameter end over the valve seal ring. Move it up and down several times to make the valve seal ring fit snugly in the pinion shaft groove.
39. Apply power steering fluid to the surface of the sleeve seal ring guide. Slip two new seal rings (A) over the ring guide from the smaller diameter end, and expand them. Install only two rings at a time from each end of the pinion shaft sleeve (B).

    Note these items when installing the seal ring:

    - Do not over-expand the seal ring. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal rings using the sizing tool.
    - There are two types of sleeve seal rings; black and brown. Do not mix the different types of rings as they are not compatible.

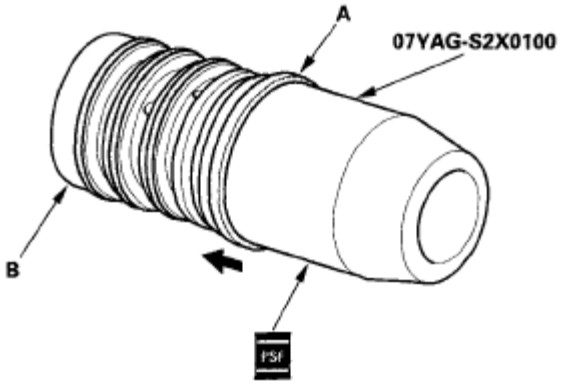

Fig. 88: Identifying Area Applying Power Steering Fluid To Surface Of Sleeve Seal Ring Guide

40. Align the ring guide with each groove in the sleeve, and slide a sleeve seal ring into each groove. After installation, compress the seal rings with your fingers temporarily.
41. Apply power steering fluid to the seal rings on the sleeve, and to the entire inside surface of the sleeve seal ring sizing tool, then slowly insert the sleeve into the sizing tool.

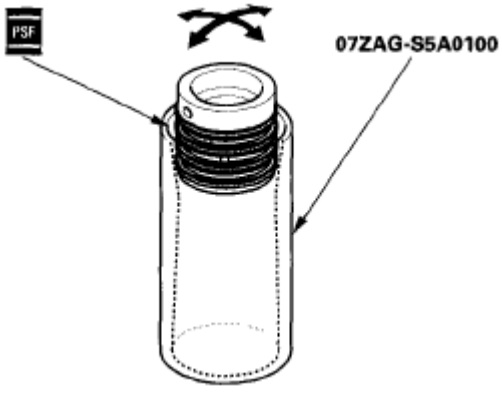

Fig. 89: Identifying Area Applying Power Steering Fluid On Sleeve

42. Move the sleeve back and forth several times to make the seal rings snugly fit in the sleeve. Make sure the seal rings are not twisted.
43. Apply power steering fluid to the surface of the pinion shaft (A). Slide the sleeve (B) onto the pinion shaft by aligning the locating pin (C) on the inside of the sleeve with the cutout (D) in the shaft. Then install the new snap ring (E) securely in the pinion shaft groove. Be careful not to damage the valve seal

ring when inserting the sleeve.

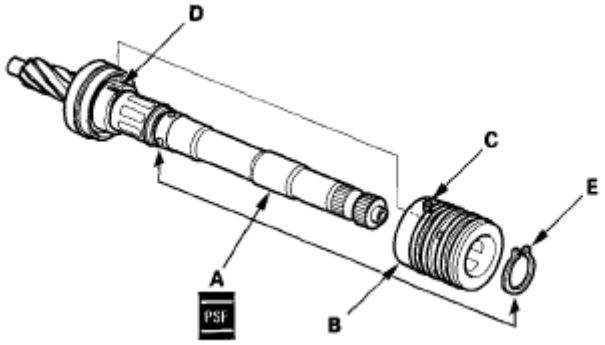

Fig. 90: Identifying Area Applying Power Steering Fluid To Surface Of Pinion Shaft

44. Apply power steering fluid to the seal ring lip of the new valve oil seal (A), then install the seal and bushing (B) in the valve housing (C) using a hydraulic press, driver, and attachment. Install the seal with its grooved side facing the tool.

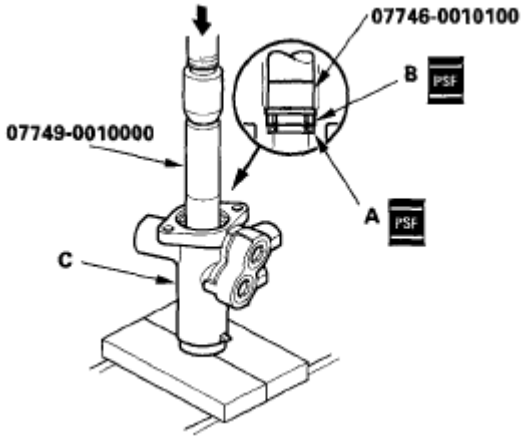

Fig. 91: Identifying Area Applying Power Steering Fluid To Seal Ring Lip

45. Press the roller bearing (A) into the valve housing (B) with a hydraulic press, driver, and attachment.

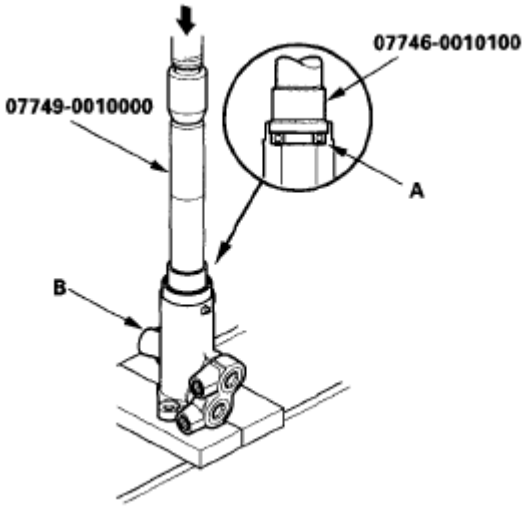

Fig. 92: Identifying Roller Bearing Into Valve Housing

46. Apply power steering fluid to the seal ring lip of the new valve oil seal (A), then install the seal in the valve housing (B) using a hydraulic press, driver, and attachment. Install the seal with its grooved side facing the tool.

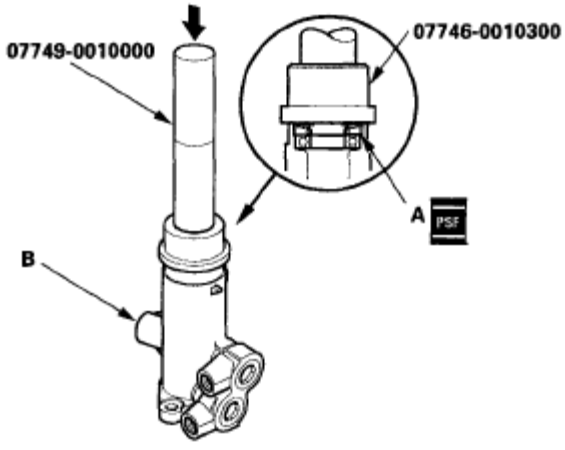

Fig. 93: Identifying Area Applying Power Steering Fluid To Seal Ring Lip

47. Apply vinyl tape (A) to the pinion shaft, then coat the vinyl tape with power steering fluid.

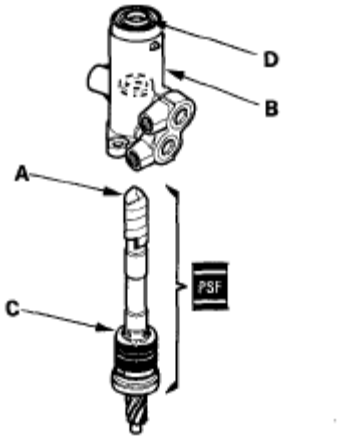

Fig. 94: Identifying Area Applying Vinyl Tape To Pinion Shaft

48. Insert the pinion shaft into the valve housing (B). Be careful not to damage the valve seal rings (C) and valve oil seal sealing lip (D).
49. Remove the vinyl tape from the pinion shaft, then remove any residue from the tape adhesive.
50. Press the pinion shaft/sleeve into the valve housing with a hydraulic press. Check that the pinion shaft/sleeve turns smoothly by hand after installing it.

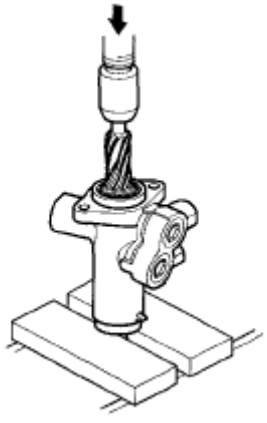

Fig. 95: Identifying Pinion Shaft/Sleeve Into Valve Housing

51. Coat the piston seal ring guide with power steering fluid, then slide it onto the rack, big end first.
52. Position the new O-ring (A) and new piston seal ring (B) on the piston seal ring guide, then slide them down toward the big end of the tool.

Note these items during reassembly:

- Do not over expand the resin seal rings. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal ring using the sizing tool.
- Replace piston's O-ring and seal ring as a set.

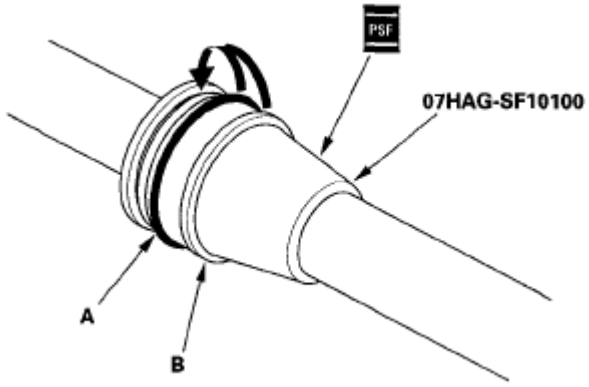

Fig. 96: Identifying O-Ring And Piston Seal Ring

53. Pull the O-ring off into the piston groove, then pull the piston seal ring off into the piston groove on top of the O-ring.
54. Coat the piston seal ring (A) and the inside of the piston seal ring sizing tool with power steering fluid, then carefully slide the tool onto the rack and over the piston seal ring.

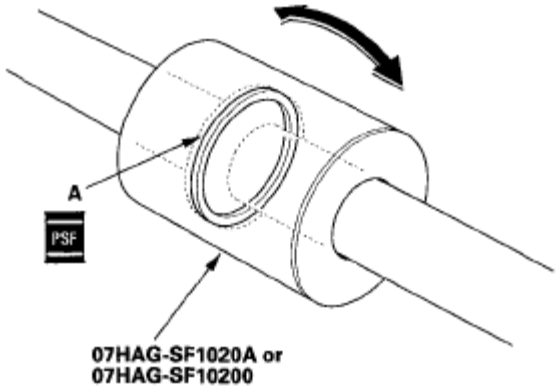

Fig. 97: Identifying Piston Seal Ring

55. Move the sizing tool back and forth several times to make the piston seal ring

fit snugly in the piston.

56. Coat the sliding surface of the cylinder end seal slider (A) and new cylinder end seal (B) with power steering fluid. Place the seal on the seal slider with its grooved side (C) facing opposite the seal slider.

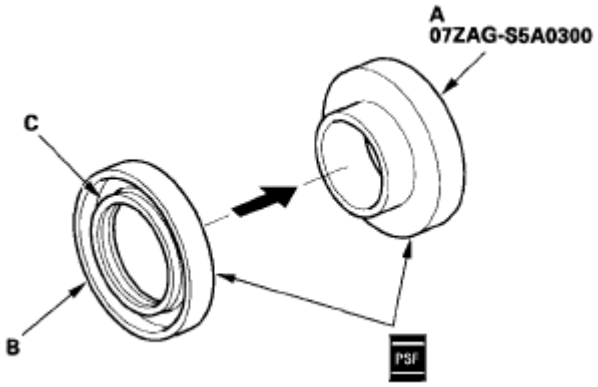

Fig. 98: Identifying Seal On Seal Slider With Grooved Side

57. Coat the surface of the steering rack (A) with power steering fluid.

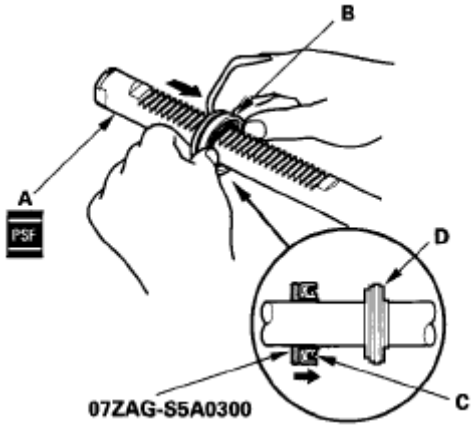

Fig. 99: Identifying Cylinder Seal Onto Steering Rack With Grooved Side

58. Install the cylinder end seal (B) onto the steering rack with its grooved side (C) toward the piston (D).
59. Separate the cylinder end seal from the cylinder end seal slider, then remove the seal slider.
60. Install the new backup ring (A) on the steering rack, then place the backup ring and cylinder end seal (B) against the piston (C).

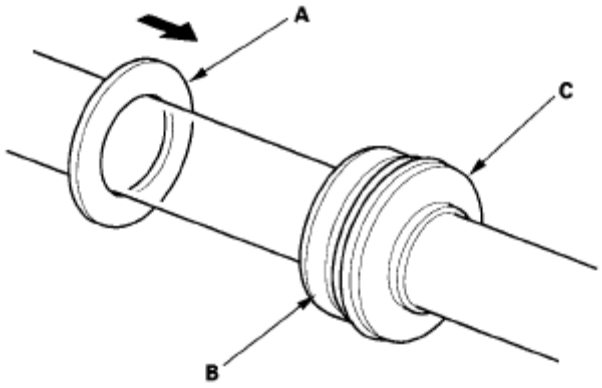

Fig. 100: Identifying Backup Ring And Cylinder End Seal

61. Apply steering grease to the steering rack teeth, then insert the steering rack into the gearbox housing. Be careful not to damage the inner surface of the cylinder wall with the rack edges.

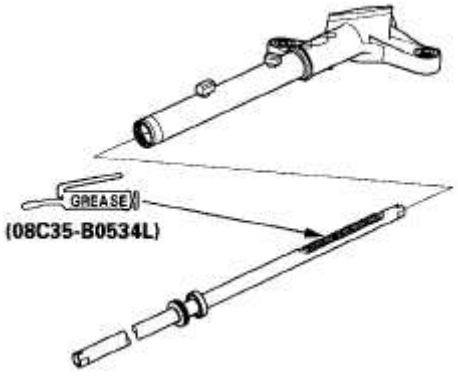

Fig. 101: Identifying Area Applying Steering Grease To Steering Rack Teeth

62. Insert an appropriate size deep socket wrench (A) onto the steering rack as shown.

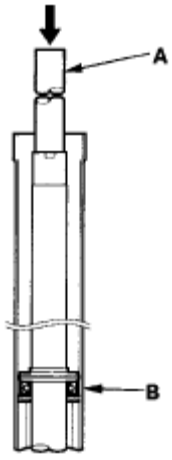

Fig. 102: Identifying Socket Wrench Onto Steering Rack

63. Install the cylinder end seal (B) into the bottom of the cylinder by pressing on the tool with a press. Do not push on the tool with excessive force as it may damage the cylinder end seal.
64. Remove the tool, and center the steering rack.
65. Coat the sliding surface of the cylinder end seal slider (A) and new cylinder end seal (B) with power steering fluid. Place the seal on the seal slider with its grooved side (C) facing opposite the seal slider.

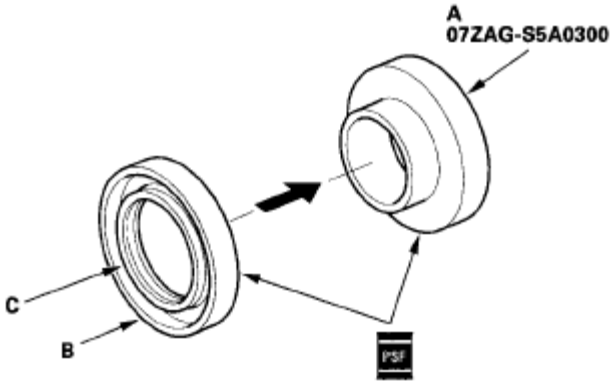

Fig. 103: Identifying Seal On Seal Slider With Grooved Side

66. Coat the inside surface of the cylinder end seal slider and steering rack with power steering fluid, then install the cylinder end seal (A) onto the steering rack with its grooved side toward the cylinder.

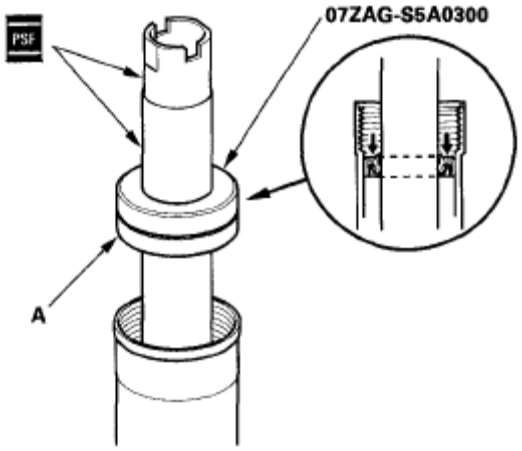

Fig. 104: Identifying Cylinder End Seal Slider And Steering Rack

67. Separate the cylinder end seal from the cylinder end seal slider, then remove the seal slider.
68. Push in the cylinder end seal with your finger. Be careful not to damage the face of the seal with the threads and burrs at the staked position of the cylinder housing.
69. Hold the gearbox housing using a C-clamp (commercially available) (A) and wooden blocks (B). Do not clamp the cylinder part of the gearbox housing in the vise.

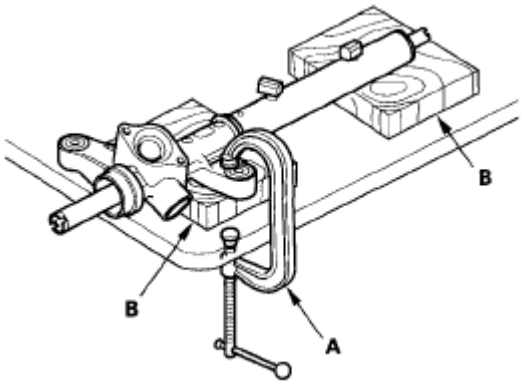

Fig. 105: Identifying Gearbox Housing Using C-Clamp (Commercially Available)

70. Coat the inside surface of the cylinder end (A) with power steering fluid, then install the cylinder end by screwing it into the cylinder (B). Tighten the cylinder end to the specified torque.

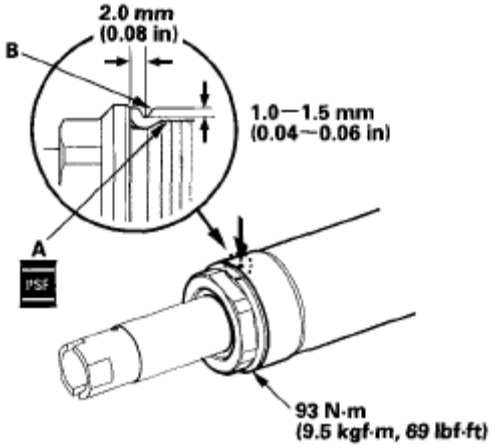

Fig. 106: Identifying Cylinder Screw (With Torque Specifications)

71. Stake the point of the cylinder shown (opposite from where the stake was removed during disassembly).
72. Install the return line joint (A), and tighten the 16 mm flare nut (B).

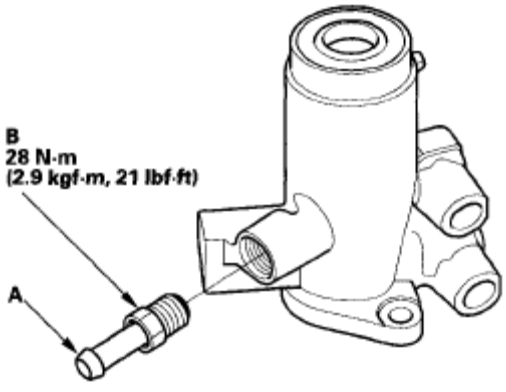

Fig. 107: Identifying Return Line Joint And Flare Nut (With Torque Specifications)

73. Coat the new O-ring (A) with steering grease, and carefully fit it on the valve housing.

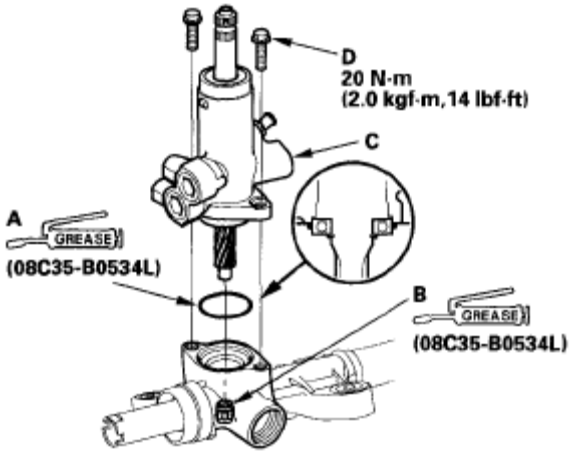

Fig. 108: Identifying Area Applying Steering Grease (With Torque Specifications)

74. Apply steering grease to the needle bearing (B) in the gearbox housing, then install the valve body unit (C) by engaging the gears. Note the valve body unit installation position (direction of the line connections).
75. Tighten the flange bolts (D) to the specified torque.
76. Install the cylinder lines.

    Note these items during reassembly:

    - Thoroughly clean the joints of the cylinder lines. The joints must be free of foreign material.
    - Install the cylinder lines by tightening the flare nuts by hand first, then tighten the flare nuts to the specified torque.

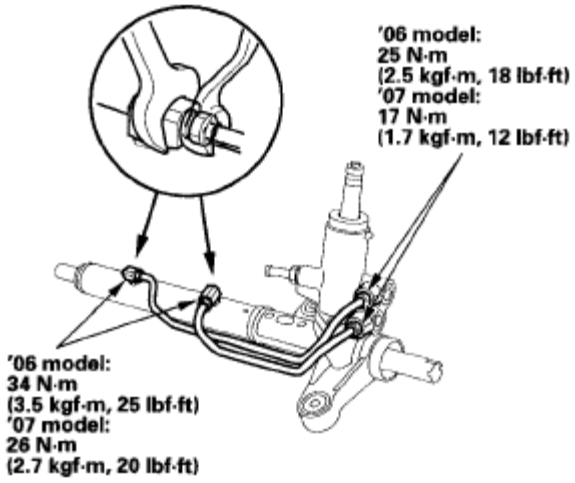

Fig. 109: Identifying Flange Bolts (With Torque Specifications)

77. Apply steering grease to the sliding surface of the rack guide (A), and install it onto the gearbox housing.

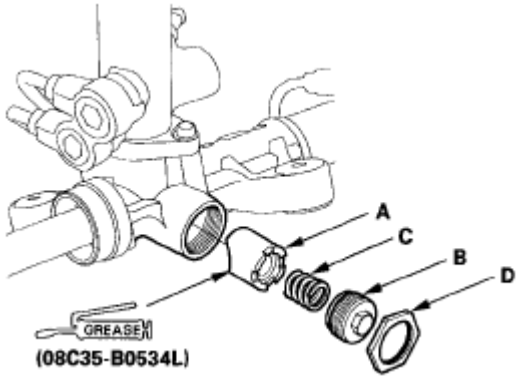

Fig. 110: Identifying Gearbox Housing Components

78. Remove the old sealant from the rack guide screw (B), then apply new sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads. Install the spring (C), rack guide screw and locknut (D).
79. Adjust the rack guide screw (see **RACK GUIDE ADJUSTMENT**). After adjusting, check that the rack moves smoothly by sliding it right and left.
80. Install a new rubber stop (A) and a new lock washer (B). Align the lock washer tabs (C) with the slots (D) on the rack end (E) while holding the lock washer in place. Repeat this step for the other side of the rack.

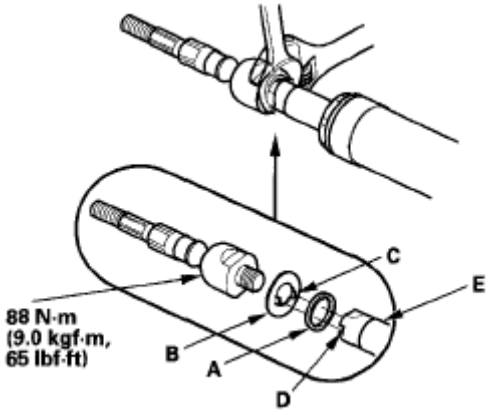

Fig. 111: Identifying Rubber Stop, Lock Washer With Slots (With Torque Specifications)

81. Hold the flat surface sections of the steering rack with a wrench, and tighten both rack ends. Be careful not to damages the rack surface with the wrench.
82. Bend the lock washer (A) back against the flat spots on the rack end joint housing.

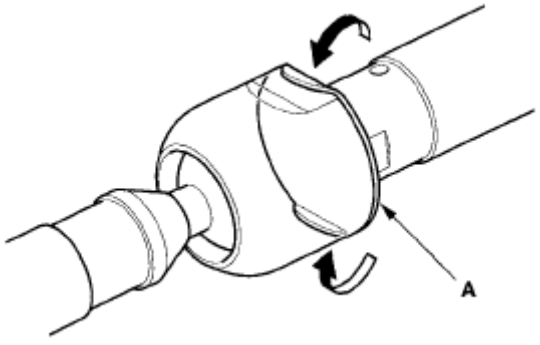

Fig. 112: Locating Lock Washer

83. Apply multipurpose grease to the circumference of the rack end joint housing (A).

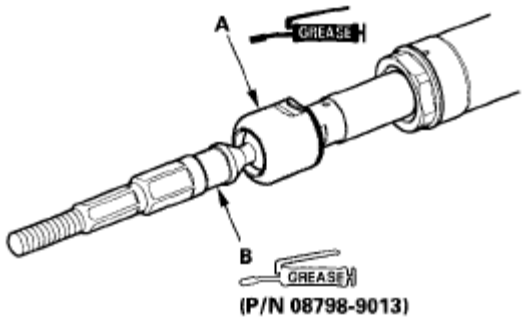

Fig. 113: Identifying Area Applying Grease

84. Apply a light coat of silicone grease (P/N 08798-9013) to the boot grooves (B) on the rack end.
85. Center the steering rack within its stroke.
86. Clean off the any grease or contamination from the boot installation grooves (A) around on the gearbox housing. Install the boots (B) on the rack ends with the tie-rod clips (C), and fit the boot end in the installation grooves in the housing properly.

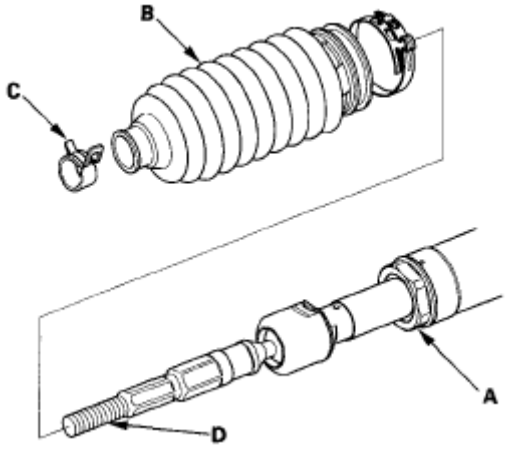

Fig. 114: Identifying Boots Tie-Rod Clips

87. After installing the boots, wipe the grease off the threaded section (D) of the rack end.
88. Install the new boot bands by aligning the tabs (A) with the holes (B) of the band.

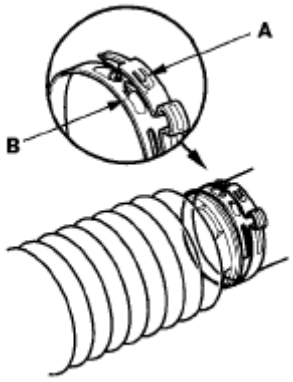

Fig. 115: Aligning Tabs With Holes Of Band

89. Close the ear portion (A) of the band (B) with commercially available pincers, Oetiker 1098 or equivalent (C).

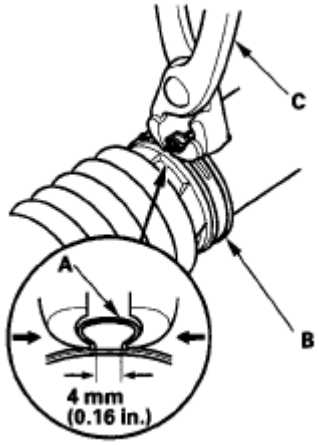

Fig. 116: Identifying Twisted Band

90. Slide the rack right and left to be certain that the boots are not deformed or twisted.
91. Reinstall the steering gearbox (see **STEERING GEARBOX INSTALLATION**).
92. Adjust the rack guide screw (see **RACK GUIDE ADJUSTMENT**). After adjusting, check that the rack moves smoothly by sliding it right and left.

STEERING GEARBOX INSTALLATION

1. Place the gearbox in position on the front subframe.

2. Loosely install the stiffener plates (A) and gearbox mounting bolts on the leftside of the steering gearbox.

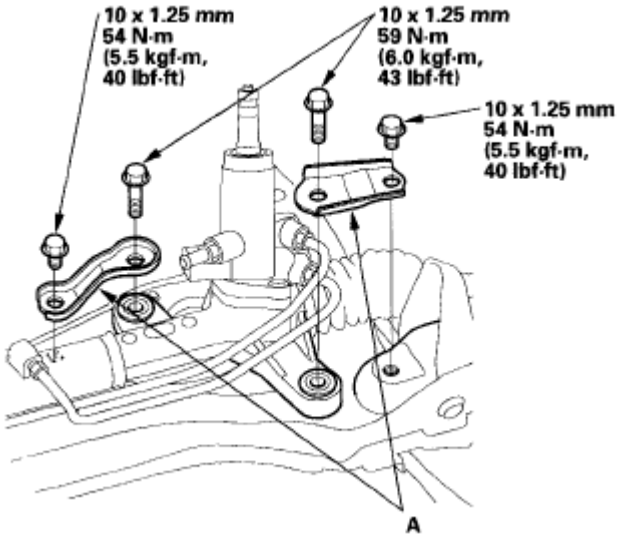

Fig. 117: Identifying Stiffener Plates And Gearbox Mounting Bolts (With Torque Specifications)

3. Position the cutout (A) on the mounting cushion (B) as shown, and install it on the right side of the steering gearbox securely.

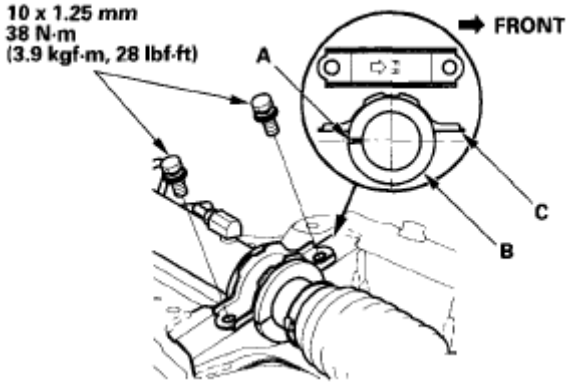

Fig. 118: Identifying Cutout On Mounting Cushion (With Torque Specifications)

4. Install the gearbox mounting bracket (C) over the mounting cushion, and loosely install the two 10 mm bolts.
5. Tighten the 10 mm bolts on the both sides of the steering gearbox to specified

torque alternately in two or more steps.

6. Install the pinion shaft grommet (A). Align the slot in the pinion shaft grommet with the lug portion (B) on the valve housing. The grommet must not have a gap at the mating surface of the grommet and valve housing.

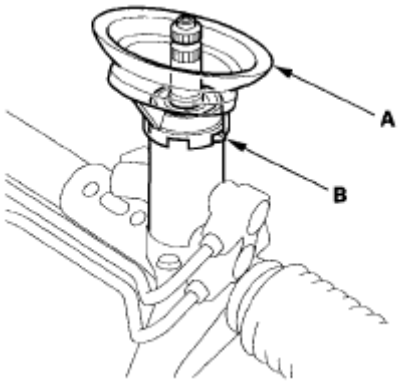

Fig. 119: Identifying Slot In Pinion Shaft Grommet With Lug Portion

7. Carefully raise the front subframe with the front subframe adaptor and the transmission jack or the powertrain lift until the subframe is in position, then loosely install new subframe mounting bolts.

NOTE: Be sure that the pinion shaft grommet is in place securely. Make sure the pinion shaft grommet is not turned up. Incorrect installation can cause leakage of water, mud, and noise.

8. Align the front subframe reference marks (A) to the body (B), as noted during removal.

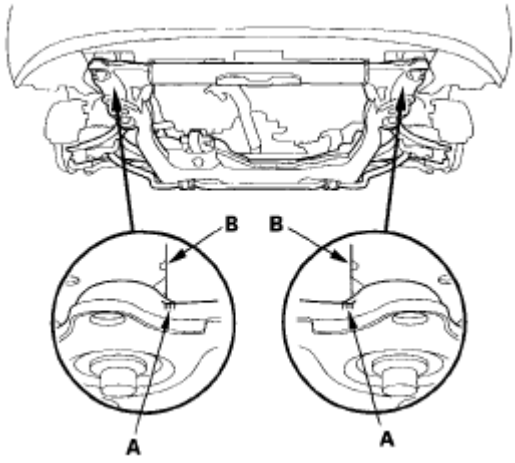

Fig. 120: Identifying Marks To Body

9. Tighten the new front subframe rear mounting bolts (A) to the specified torque.

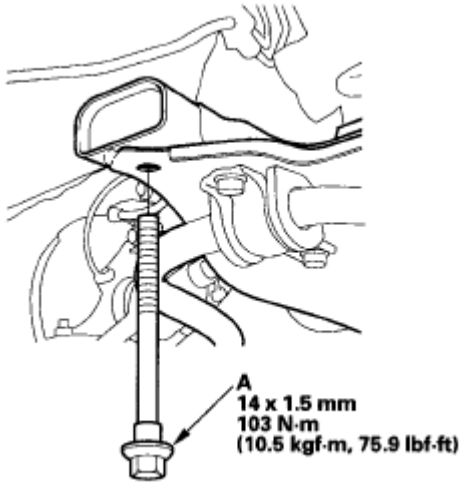

Fig. 121: Identifying Front Subframe Rear Mounting Bolts (With Torque Specifications)

10. Tighten the new front subframe front mounting bolts (A) to the specified torque.

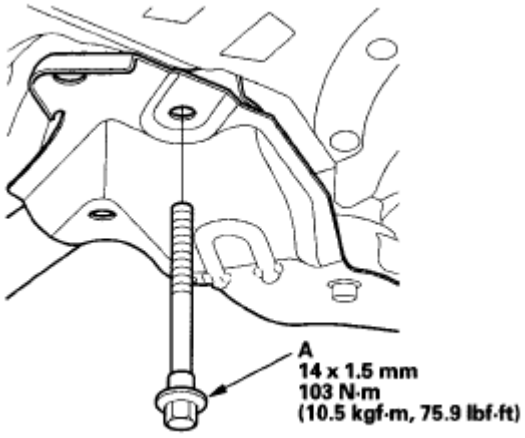

Fig. 122: Identifying Front Subframe Front Mounting Bolts (With Torque Specifications)

11. Install the new lower torque rod bracket bolts (A), and tighten to the specified torque.

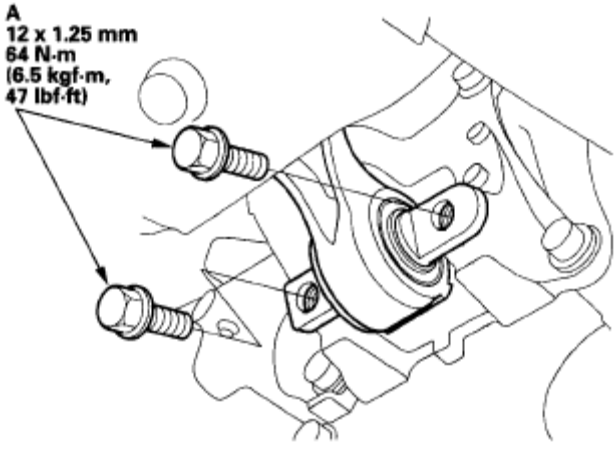

Fig. 123: Identifying Lower Torque Rod Bracket Bolts (With Torque Specifications)

12. Install the new front subframe middle mount bolt (A) on the left side, and tighten it to the specified torque.

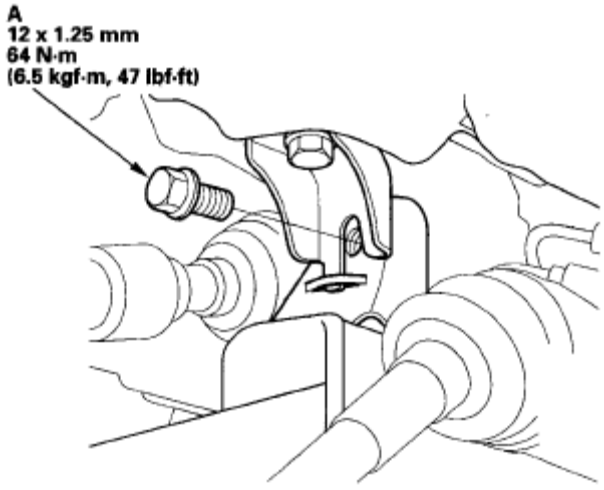

Fig. 124: Identifying Front Subframe Middle Mount Bolt On Left Side - Specified Torque

13. Install the new front subframe middle mount bolt (A) on the right side, and tighten it to the specified torque.

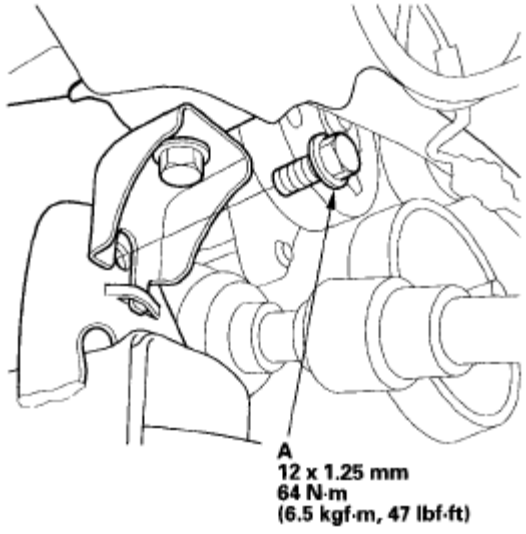

Fig. 125: Identifying Front Subframe Middle Mount Bolt On Right Side (With Torque Specifications)

14. Lower the transmission jack supporting the front subframe.
15. Connect the lower arm (A) to the lower ball joint (B).

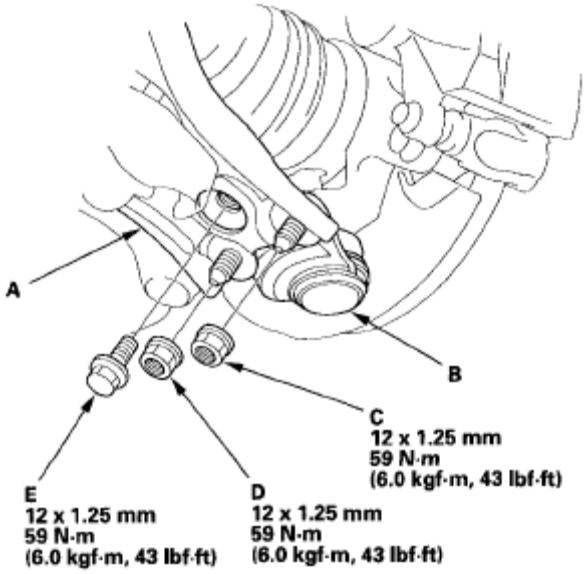

Fig. 126: Identifying Lower Arm To Lower Ball Joint (With Torque Specifications)

16. Install a new flange bolt and the new flange nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order; the flange nut on the front (C), the flange nut on the rear (D), then the flange bolt (E).
17. Connect the inlet line (A), and loosely install the 18 mm flare nut (B). Do not tighten the flare nut to the specified torque yet.

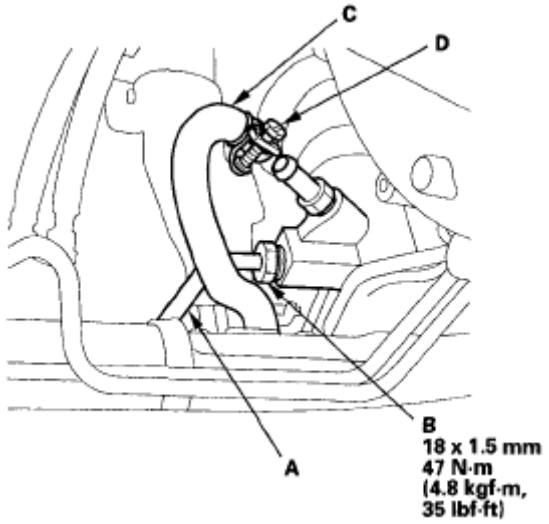

Fig. 127: Identifying Flare Nut (With Torque Specifications)

18. Connect the return hose (C) securely, and tighten the adjustable hose clamp (D) (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**).
19. Install the inlet line clamp bolt (A). Install the return line holder (B), and the return line clamp bolt (C) on the front subframe.

NOTE: Make sure that there is no interference between the inlet line, the return line, and any other parts.

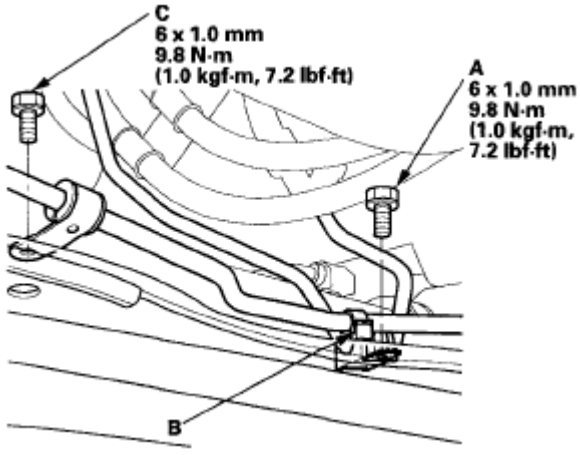

Fig. 128: Identifying Return Line Clamp Bolt (With Torque Specifications)

20. Retighten the inlet line 18 mm flare nut to the specified torque value.
21. Install the front splash shield, 2-door (see **FRONT SPLASH SHIELD REPLACEMENT**), 4-door (see **4-DOOR**).
22. Wipe off any grease contamination from the ball joint tapered section and threads. Reconnect the tie-rod ends (A) to the steering knuckles. Install the 12 mm nut (B), and tighten it.

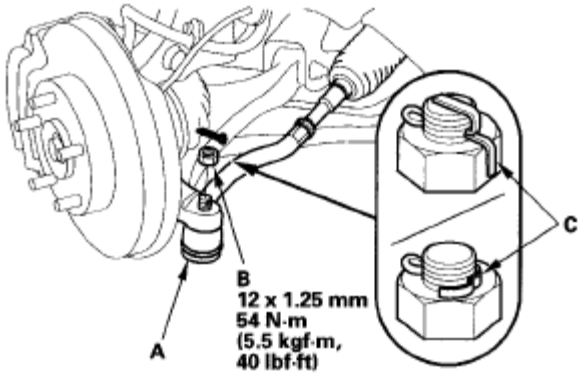

Fig. 129: Identifying Tie-Rod Cotter Pin (With Torque Specifications)

23. Install the new cotter pin (C), and bend it as shown.
24. Install the pump outlet hose clamp (A).

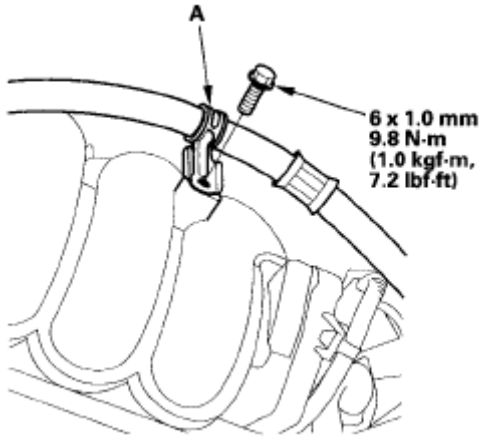

Fig. 130: Identifying Pump Outlet Hose Clamp (With Torque Specifications)

25. Remove the engine hanger, support bolt, and support hanger from the vehicle.
26. Center the steering rack within its stroke in the steering joint connection.
27. With the rack in the straight ahead driving position, cut the wire (A) and slip the lower end of the steering joint onto the pinion shaft (B) in the range shown.

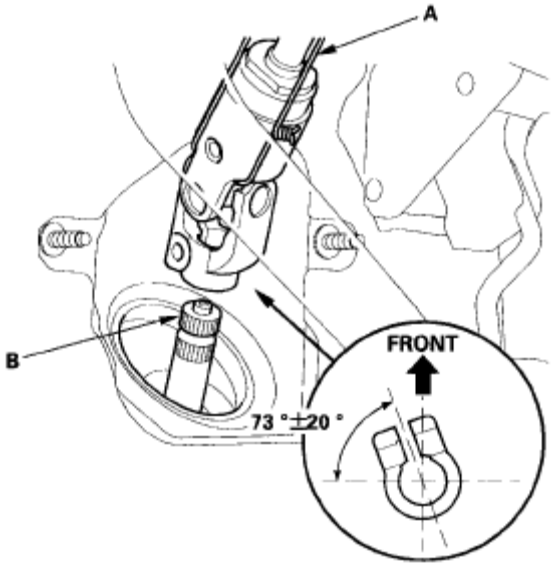

Fig. 131: Identifying Steering Joint Onto Pinion Shaft

28. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Be sure that the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure that the steering joint is fully seated. Tighten the steering joint bolt to the specified torque.

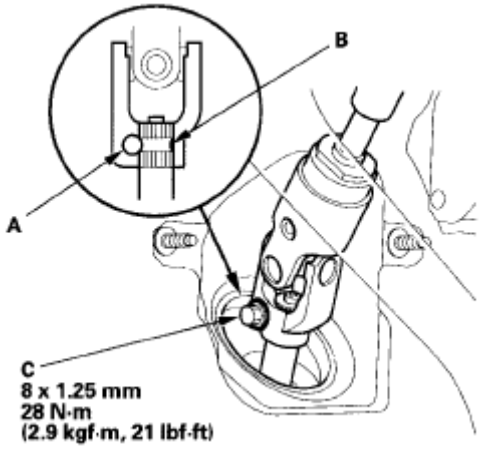

Fig. 132: Aligning Bolt Hole On Steering Joint (With Torque Specifications)

29. Install the steering joint cover (A).

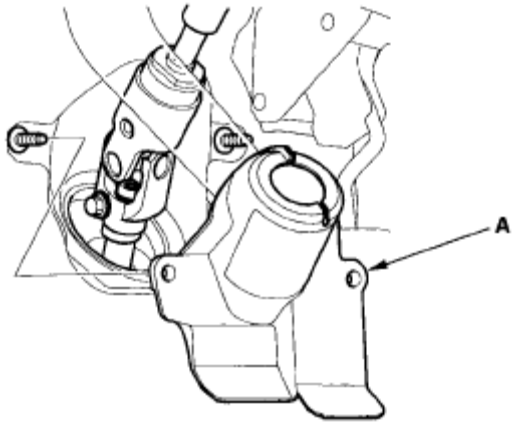

Fig. 133: Identifying Steering Joint Cover

30. Install the driver's dashboard undercover (see **DRIVER'S DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
31. Install the front wheel, then set the front wheels in the straight ahead position.
32. Install the steering wheel (see **STEERING WHEEL INSTALLATION**).
33. Install the air cleaner housing mounting bracket (A) on the cylinder head.

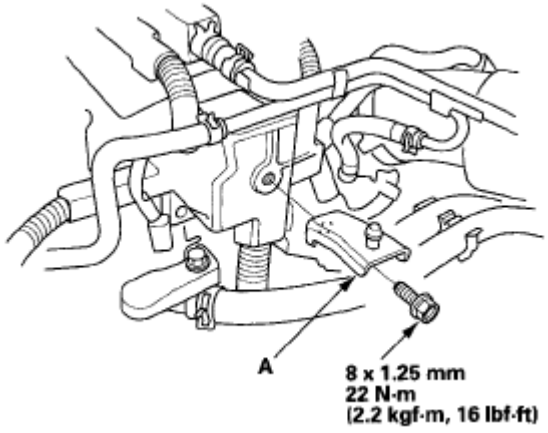

Fig. 134: Identifying Air Cleaner Housing Mounting Bracket (With Torque Specifications)

34. Install the air cleaner housing (see **THROTTLE BODY CLEANING**).
35. Install the under-cowl panel and cowl cover (see **FRONT GRILLE COVER REPLACEMENT**).
36. Reconnect the negative cable to the battery and do these items:

- Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
- Enter the anti-theft code for the audio or navigation system, then enter the audio presets.
- Set the clock.
- Make sure the horn and turn signal switch work properly.
- Make sure the steering wheel switches work properly.
- Make sure the steering wheel is centered.

37. Fill the system with power steering fluid, and bleed air from the system (see **FLUID REPLACEMENT**).
38. After installation, do the following checks:
    - Start the engine, and let it idle. Turn the steering wheel from lock-to-lock several times to warm up to the fluid. Check the steering gearbox for leaks (see **FLUID LEAKAGE INSPECTION**).
    - Check the steering wheel spoke angle.

      IF steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations, then adjust the front toe by turning the tie-rod ends, if necessary.

    - Check the front toe inspection (see **FRONT TOE INSPECTION/ADJUSTMENT**).

GEARBOX MOUNT CUSHION REPLACEMENT

1. Remove the steering gearbox (see **STEERING GEARBOX OVERHAUL**).
2. Position the 34 mm socket wrench (A) on the flange part of the gearbox housing with a washer (B), 10 x 105 mm flange bolt (C) and the 10 mm nut (D) as shown.

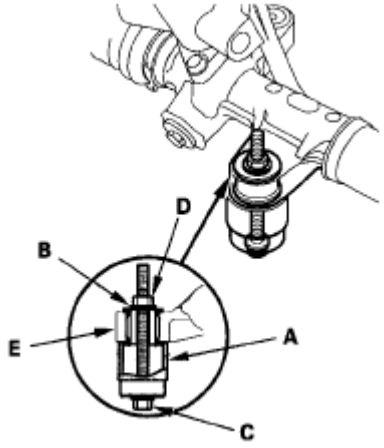

Fig. 135: Identifying Gearbox Flange Bolt And Nut

3. Hold the 10 mm nut with a wrench, and tighten the 10 x 105 mm flange bolt with another wrench. Remove the gearbox mount cushion (E).
4. Apply a mild soap and water solution to the new gearbox mount cushion surface (A), then place the mount cushion on the gearbox mounting cushion hole.

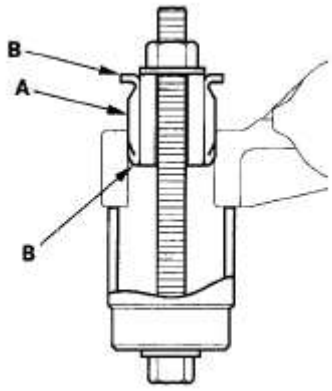

Fig. 136: Identifying Gearbox Housing, Washer, Flange Bolt And Nut

5. Position the 34 mm socket wrench on the flange part of the gearbox housing with a washer, flange bolt, and the nut as shown.
6. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (B) properly fit on the gearbox flange surface.
7. Install the steering gearbox (see **STEERING GEARBOX INSTALLATION**).

8. Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).